commodore home computing power play

October/November 1984
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Commodore Kids: Changing the Face of Computing

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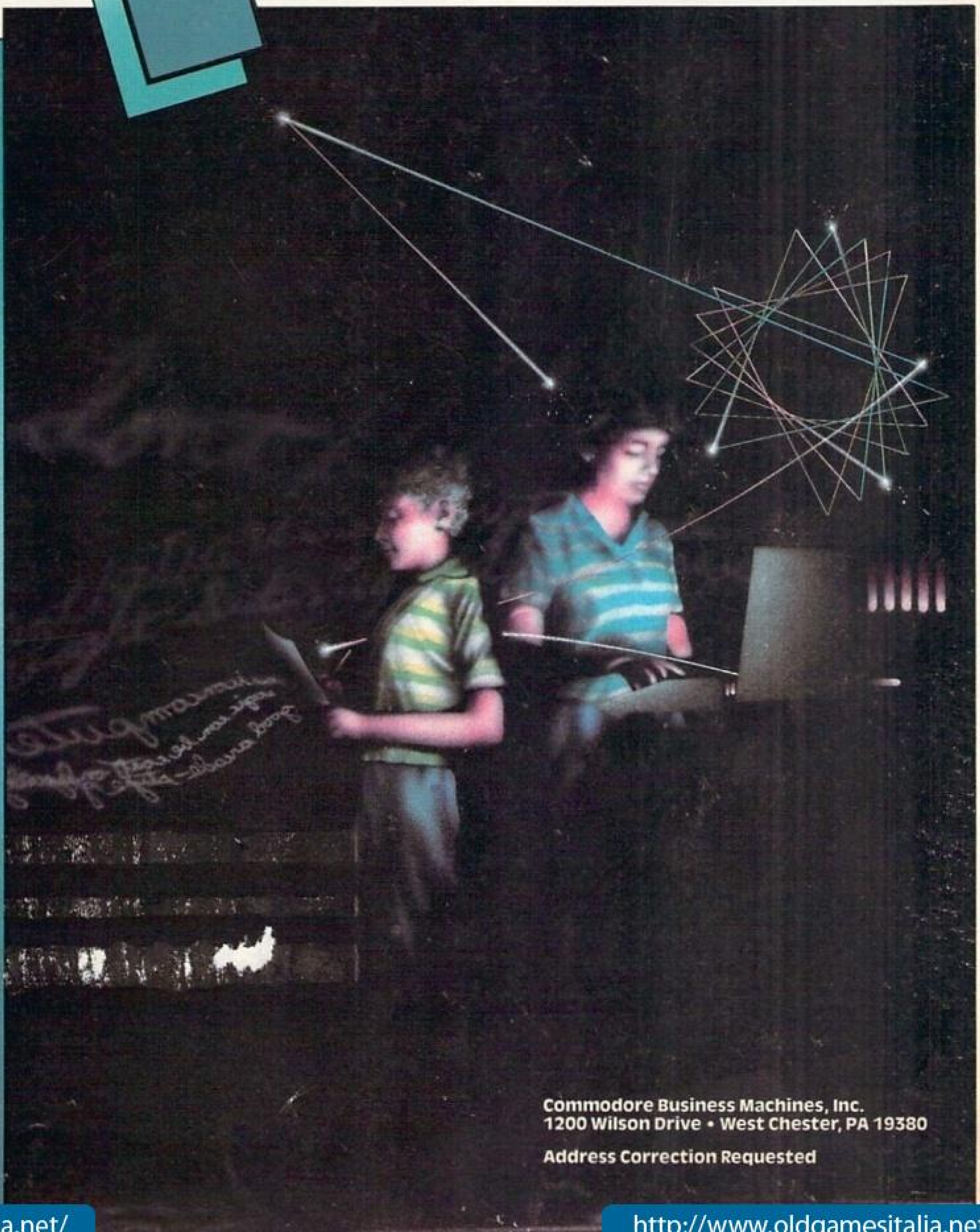
New Products: Turtle Toyland, Jr. Solo Flight



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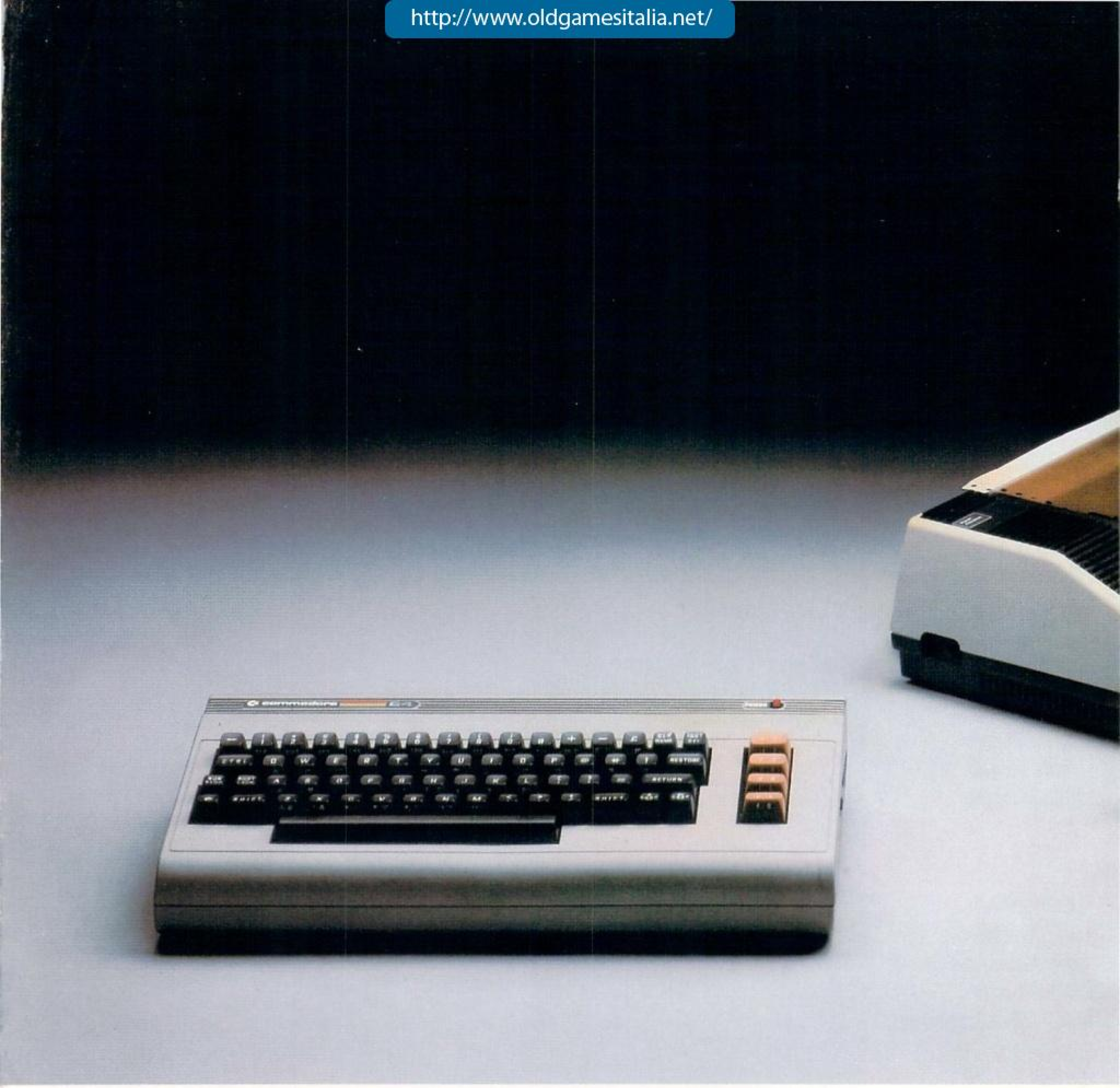

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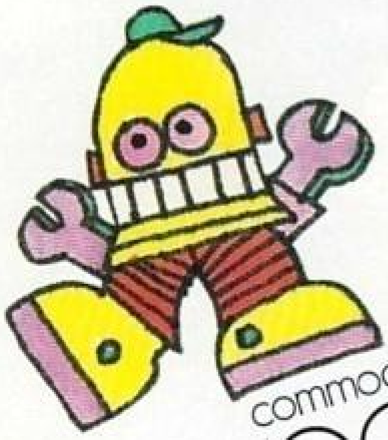

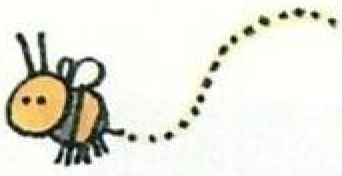

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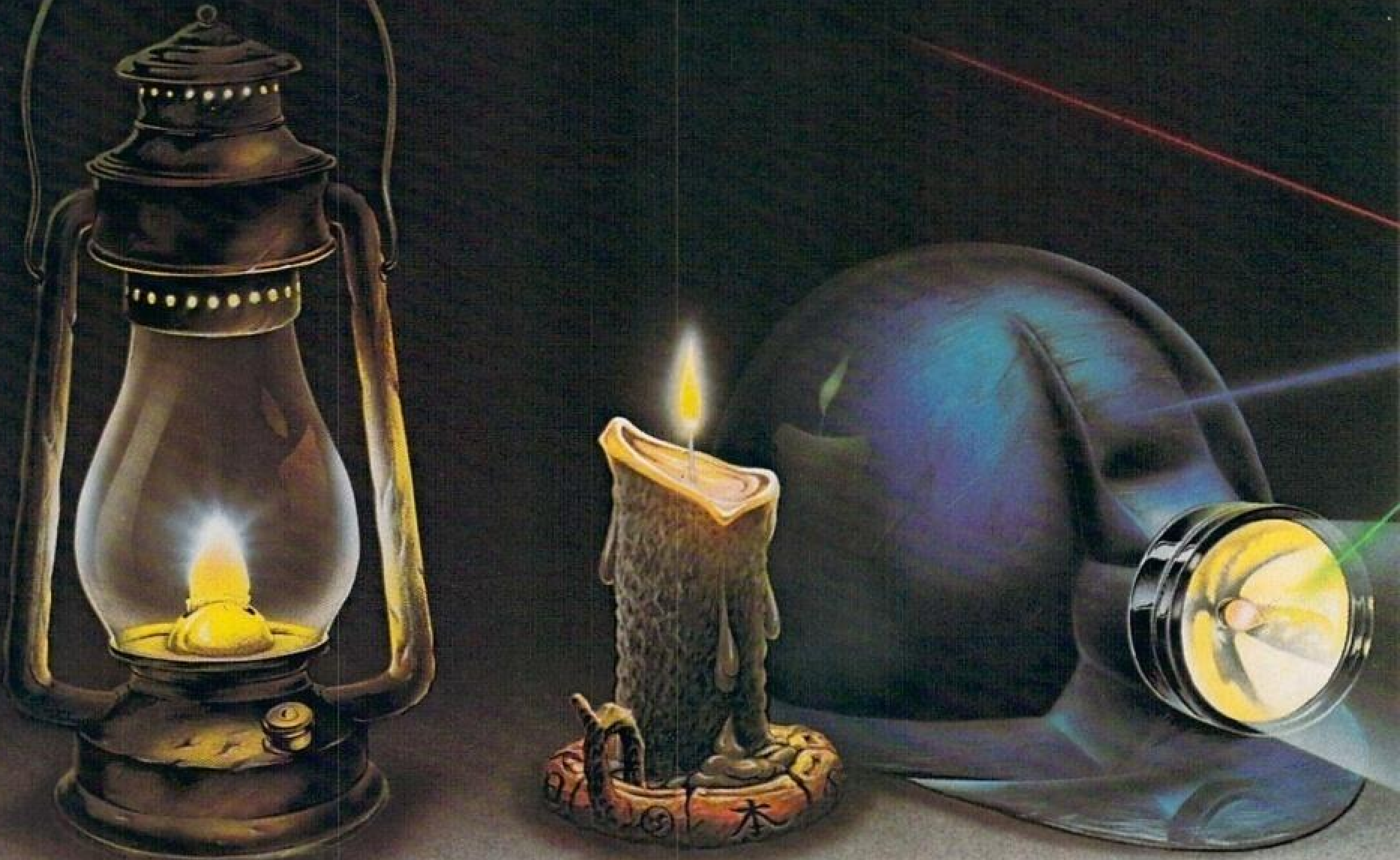
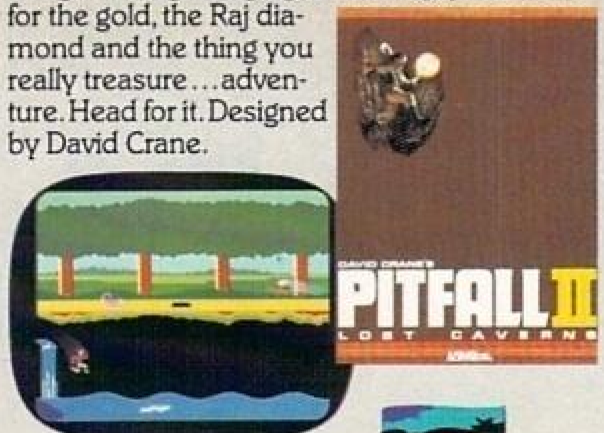
INTRODUCING ACTIVISION

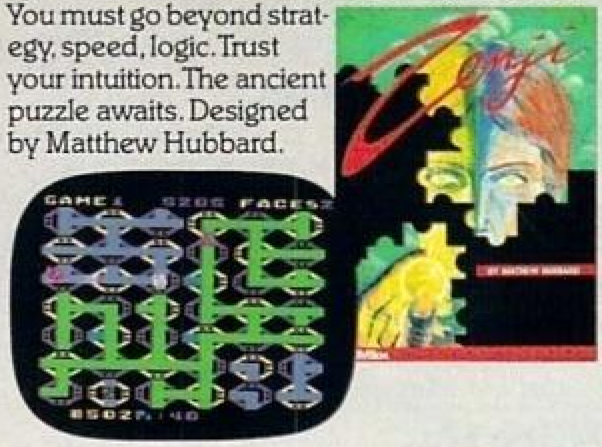
SEE YOURSELF IN A



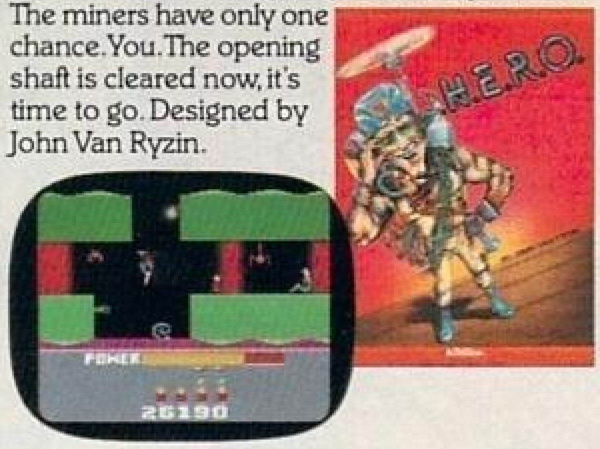
You leave the sun behind as you lower yourself down into the unexplored caverns beneath the Peruvian jungle. Deeper and deeper you go. Past Amazon frogs, condors, and attacking bats. Across eel-infested underground rivers. From cavern to cavern, level to level. Swimming, running, dodging, stumbling, you search for the gold, the Raj diamond and the thing you really treasure . . . adventure. Head for it. Designed by David Crane.



You have heard the elder speak of one central source and a maze of unconnected grey paths. As you connect each grey path to the central source, what was grey becomes the green of life. When all are connected, then you have achieved "Zenji." But beware the flames and sparks of distraction that move along the paths. You must go beyond strategy, speed, logic. Trust your intuition. The ancient puzzle awaits. Designed by Matthew Hubbard.



You strap on your helicopter prop-pack, check your laser helmet and dynamite. There's no predicting what you'll have to go through to get to the trapped miners. Blocked shafts, molten lava, animals, insects, who knows what lies below. But you'll go, you're in charge of the Helicopter Emergency Rescue Operation. The miners have only one chance. You. The opening shaft is cleared now, it's time to go. Designed by John Van Ryzin.



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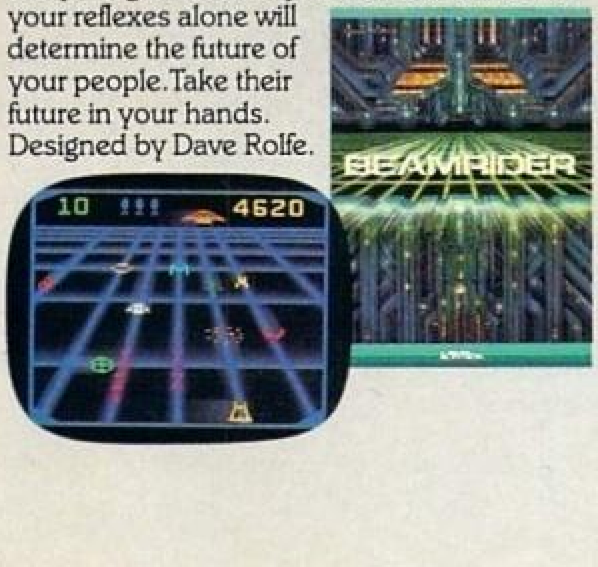
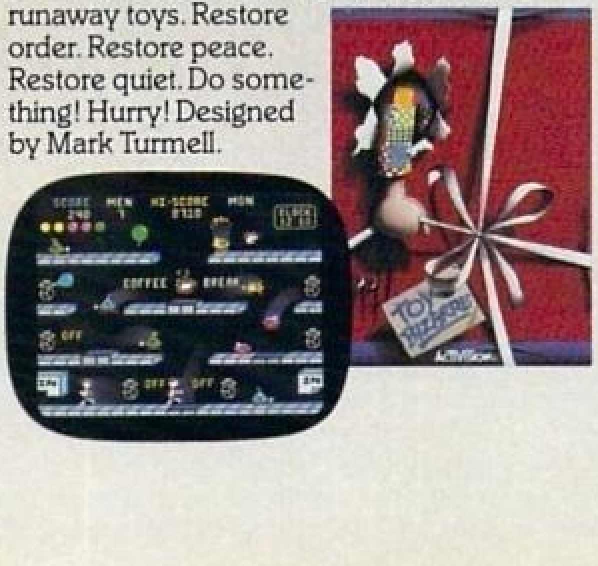
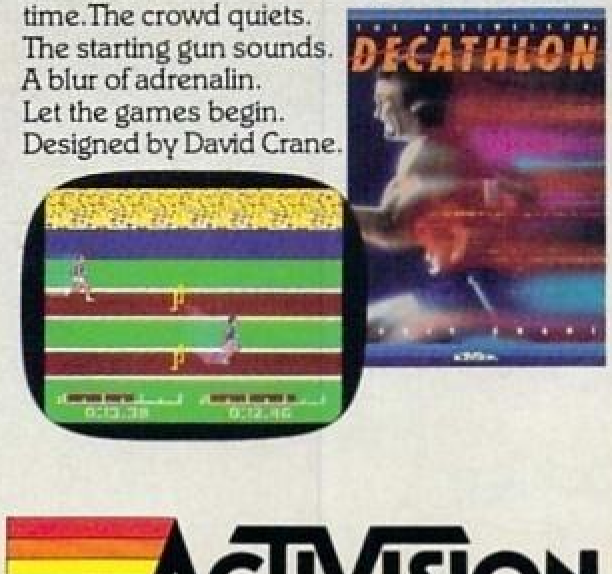


You can almost hear the quiet. And it's your job to keep it that way. A toy factory at midnight. Did you hear something? Guess not. Wrong! Suddenly balloon valves open, conveyor belts move and a whole factory full of toys goes wild. Even the robot, their latest development, is on the loose and after you. Capture the runaway toys. Restore order. Restore peace. Restore quiet. Do something! Hurry! Designed by Mark Turmell.



You made it. The Olympics. You hear languages you've never heard. And the universal roar of the crowd. You will run. Hurl. Vault. Jump. Ten events. One chance. You will push yourself this time. Further than ever. Harder than ever. But then . . . so will everyone. The competition increases, now two can compete at the same time. The crowd quiets. The starting gun sounds. A blur of adrenalin. Let the games begin. Designed by David Crane.



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Commodore Microcomputers, Issue 32, November/December: Devoted to the sounds of MUSIC on the Commodore 64, this issue will give you new insight into the workings of the SID (Sound Interface Device). Featuring a detailed look at electronic composer Ryo Kawasaki and his exciting work with a Commodore 64.

Power/Play, Issue 12, December/January: Our special Christmas issue spotlights recreational and home-applications software for Commodore computers. You'll also get an in-depth look at the best joysticks on the market. Which one will help you get a higher score?

Key to Entering Program Listings

```
"[F1,F2,F3,F4,F5,F6,F7,F8]":F1,F2,F3,F4,
  F5,F6, F7 AND F8
"[POUND]":ENGLISH POUND
"[PI]"PI SYMBOL
"^":UP ARROW
"[HOME]":UNSHIFTED CLR/HOME
"[CLEAR]":SHIFTED CLR/HOME
"[RVS]":REVERSE ON
"[RVOFF]":REVERSE OFF
"[BLACK,WHITE,RED,CYAN,MAGENTA,GREEN,BLUE,
  YELLOW]" THE 8 CTRL KEY COLORS
"[ORANGE,BROWN,L. RED,GRAY 1,GRAY 2,L.
  GREEN,L. BLUE,GRAY 3]":THE 8
  COMMODORE KEY COLORS (ONLY ON THE 64)
GRAPHIC SYMBOLS WILL BE REPRESENTED AS
  EITHER THE LETTERS SHFT (SHIFT KEY) AND
  A KEY:"[SHFT Q,SHFT K,SHFT V,SHFT T,
  SHFT L]"
  OR THE LETTERS CMDR (COMMODORE KEY) AND
  A KEY:"[CMDR Q,CMDR H,CMDR S,CMDR N,
  CMDR O]"
IF A SYMBOL IS REPEATED, THE NUMBER OF
  REPITITIONS WILL BE DIRECTLY AFTER THE
  KEY AND BEFORE THE COMMA:"[SPACE3,
  SHFT S4,CMDR M2]"
```

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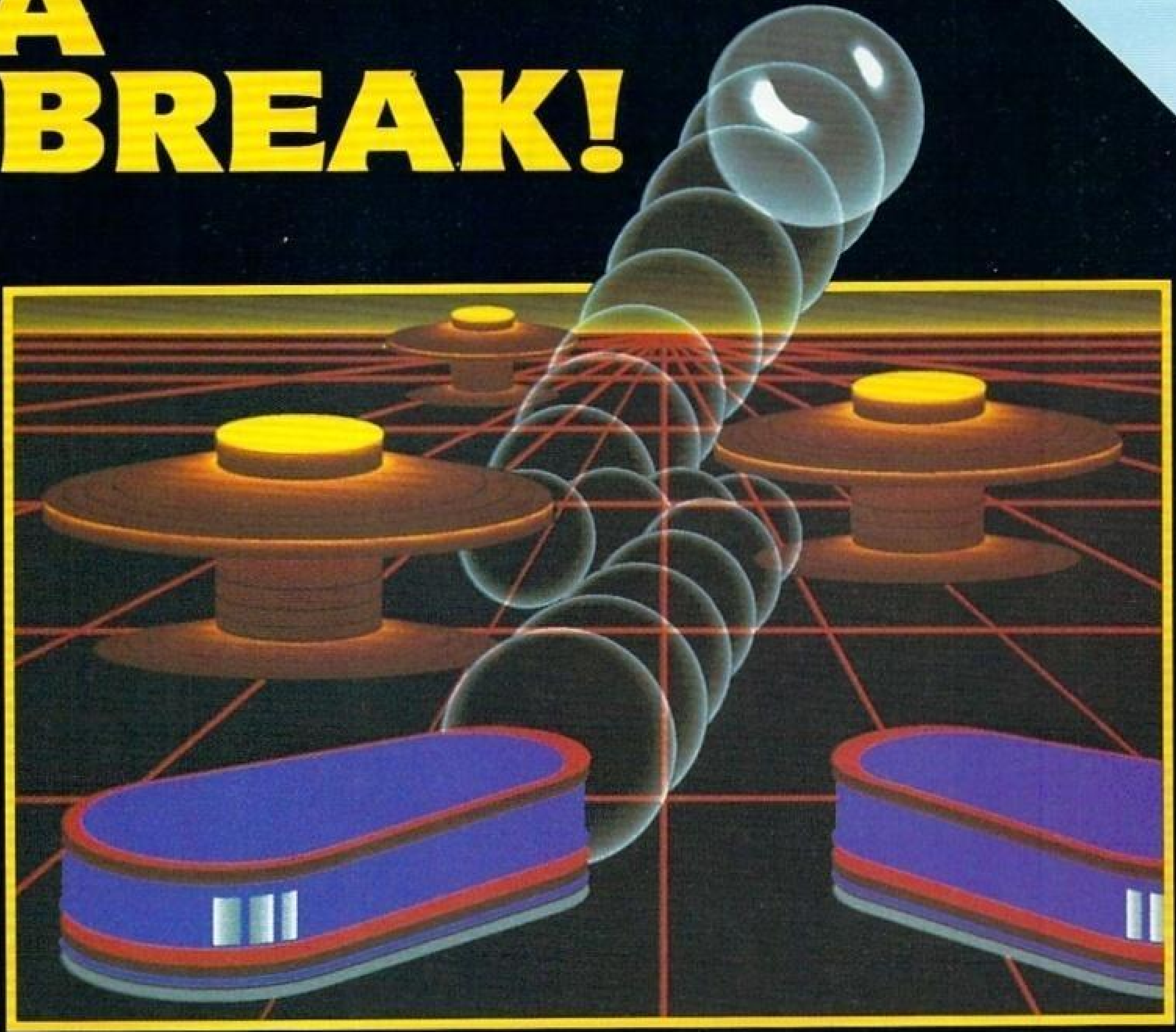

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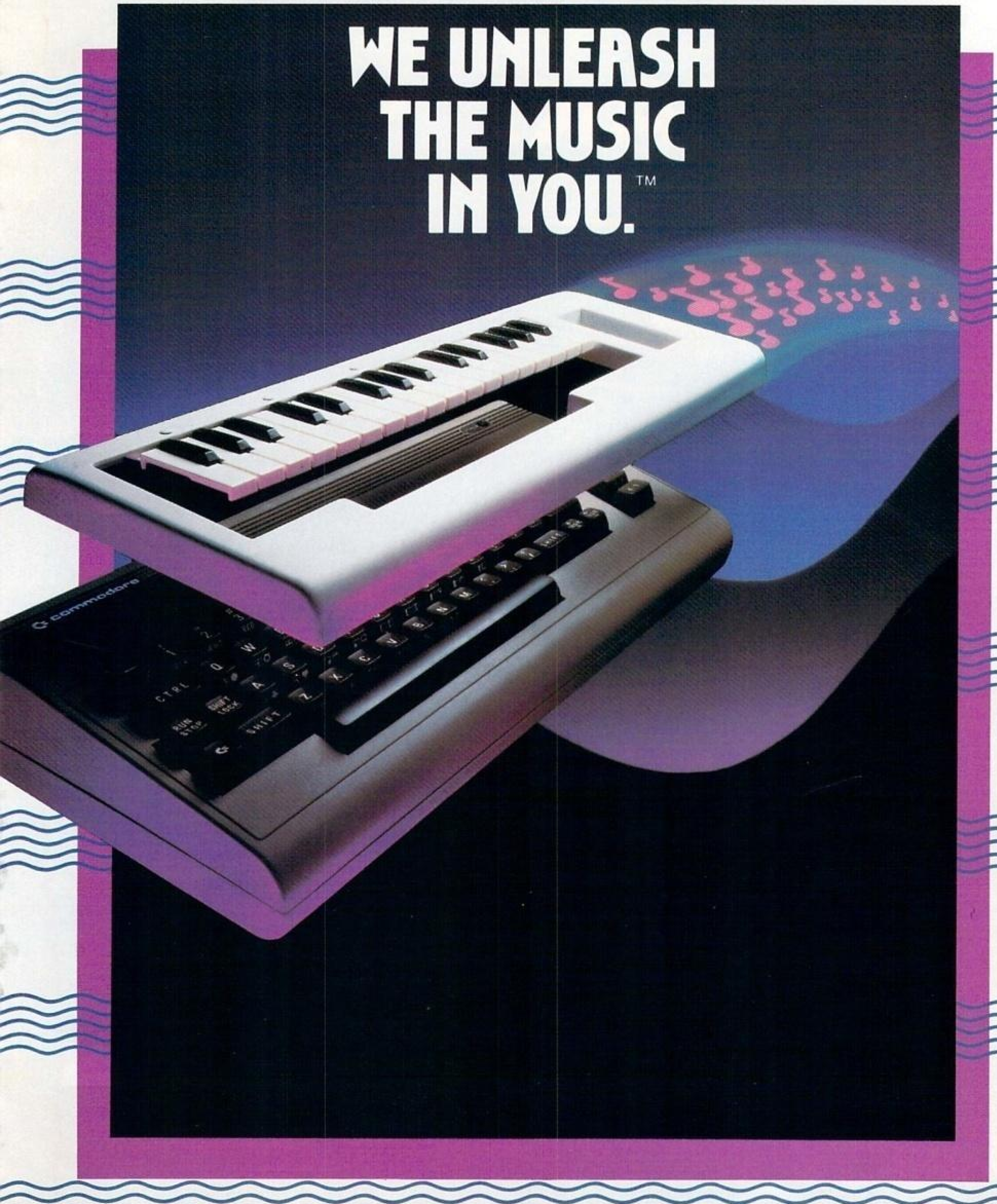
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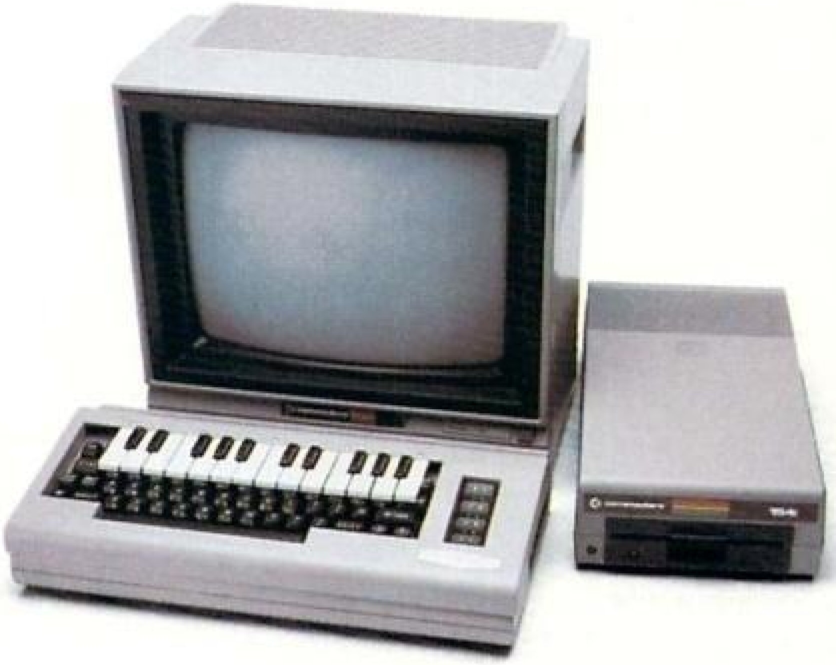

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Kids and Computers

Commodore kids—maybe you're one yourself. Or maybe you're the parent or friend of one. Whatever the case may be, we think you'll find this issue—featuring kids of course—entertaining and informative. As associate editor Betsy Byrne points out in her article about young writers on page 34, computers are in many ways great levelers—kids can use them just as successfully as, and often better than, adults. In fact, Commodore kids are out there creating new applications, writing articles for magazines and programs for software companies and running user groups just as competently as grownups are. And we all know who can usually play computer video games better.

You'll notice that in our features section, which, as we said, is supposed to be devoted to kids, there's an article about Fred D'Ignazio. Even though Fred is actually older than the other kids in this section, we thought he belonged here because he has done a lot to further the cause of kids and computers—mainly by taking the time to explain computers to grownups. As you'll see when you read the article, Fred approaches computing more like a youngster than a grownup, anyway.

Kids and their interests were well represented at the summer Consumer Electronics Show (CES), held last June in Chicago. Of the top thirty or so award-winning software packages at the show, for instance, more than half were aimed specifically at kids' interests. This means, among other things, that kids wield quite a bit of power in the computer industry marketplace and are important in determining what products ever even see the light of day. For more about that CES, check out our "News from the Front" section in this issue.

Also introduced at that show, in case you haven't heard yet, was Commodore's new entry-level computer, dubbed the Commodore 16. The C16 is a scaled-down version of Commodore's "productivity" computer, the Plus/4 (originally called the 264), and contains many of the same features, including 3.5 extended BASIC, builtin machine language monitor, 16 colors with eight luminence levels and a 40-column screen with 320 × 200-pixel resolution. It also promises to be compatible with the 1541 disk drive and 1531 datassette and upwardly software compatible with the Plus/4.

The main differences between the sophisticated Plus/4 and the Commodore 16 are threefold—the C16 has a 16K RAM instead of a 64K; the C16 has no builtin integrated software like its big sister; and last, but not least, the price tag on the 16 should be very low—just the right price for kids.

Before I close I'd like to welcome our new publisher, Robert Kenney, who has replaced Neil Harris. (Neil hasn't gone very far away—only down the hall to Commodore's software division, so we can still coerce him into doing his eminently readable reviews.) Bob comes to us from a varied and interesting publishing background and has already begun to take this unwieldy (and sometimes unruly) department in hand with great alacrity and aplomb. (How's that for alliteration?) We look forward to great achievements under Bob's guidance.

We hope you enjoy this issue. Write to us once in a while to let us know what you like and don't like. We can't always answer, but we do read your letters.

—Diane LeBold
Editor

Diane LeBold

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Our Users' Most Asked Questions

Care of Customer Support

By Linda Lee
Commodore Customer Support

It is 8:50 AM on Monday morning and Commodore's Customer Support team is gearing up for another day. Computers are on, technical letters are getting their last touches, and special software questions are being reviewed. The CompuServe Hotline representative begins the downloading process for the day while discussions of imminent questions and answers float throughout the room.

As the morning progresses, the atmosphere becomes more intense. It seems like a lot of people need to know the same thing. Then, a brainstorm! If so many people ask the same questions, why not put the answers in *Power/Play?*

Question: How do you format a disk?

Answer: This has to be the single most-asked question. To format a disk, place a new disk in the disk drive, then type in:

```
OPEN15,8,15
PRINT#15,"N0:DISKNAME,
id#":CLOSE15
```

Warning: this command is necessary when using a new, blank (not preprogrammed software) diskette for the first time. You can't save to a disk unless it is formatted. This command will erase the entire diskette, however, if there is something already on the diskette.

The purpose of this command is to put timing and block markers on the diskette and create the directory. To load the directory on a diskette, put it into the drive and type in:

```
LOAD"$",8 <RETURN>
```

The computer will respond with:

```
SEARCHING FOR $
LOADING
READY
```

You then type in:

```
LIST
```

You will then see a listing of every program on the diskette.

Question—How do I get the output of my program to print on my Commodore printer?

Answer—You can use a screen dump program to get the output of a program to dump to a printer. This program is incorporated into your program as a GOSUB routine. For example, if your program ends on line 650, then you would add the screen dump program starting on line 60000. Within your program, you would insert on a numbered line

```
GOSUB60000
```

whenever you want a screen to be printed. This will make the computer exit from the main program, jump down to the GOSUB routine, print to the printer, then return to the main program and finish running. This program can be found in your printer manual labeled "Hard Copy Of The Screen."

Here is a short version of a screen dump written by Customer Support representative, John Fahey. This program is much faster, but it will not do reversed characters. The directions for using it are the same as the program in the manuals. It will work on the 1525, MPS801, and 1526. It will also work on the 1520 Printer/Plotter if line 60000 is changed.

```
10 GOSUB 60000
60000 A$="":OPEN 4,4:Z=1023
      :FOR Y=0 TO 24:FOR X=0 TO 39
      :Z=Z+1
60010 CH=PEEK(Z):IF CH>=128 THEN
      CH=CH-128
60020 IF CH<32 OR CH>95 THEN CH=CH+64
      :GOTO 60040
60030 IF CH>63 AND CH<36 THEN CH=CH+32
60040 A$=A$+CHR$(CH):NEXT:PRINT#4,A$
      :A$="":NEXT:CLOSE 4:RETURN
```

Another short-short by John will turn the 64 into a limited capability typewriter. This program runs alone (needs no supporting program). It uses uppercase/graphics (not reversed) and 40 columns. To make full use of the screen, hit the CLEAR/HOME key. Type as you would with a typewriter. Then

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Build your own songs by overdubbing up to 3 layers of notes (each with its own instrument sound!). Or record 1–2 layers of notes and play the third layer *live*. Also, change the key and speed of your music.

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See the songs you write with the SONG BUILDER displayed on a four-color Grand Staff on your monitor. And conveniently edit your songs.

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The SONG PRINTER prints out your songs in standard music notation.

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View a full color graphic display that looks like the front panel of a professional synthesizer to program the shape, volume and tone of your own personal sounds.

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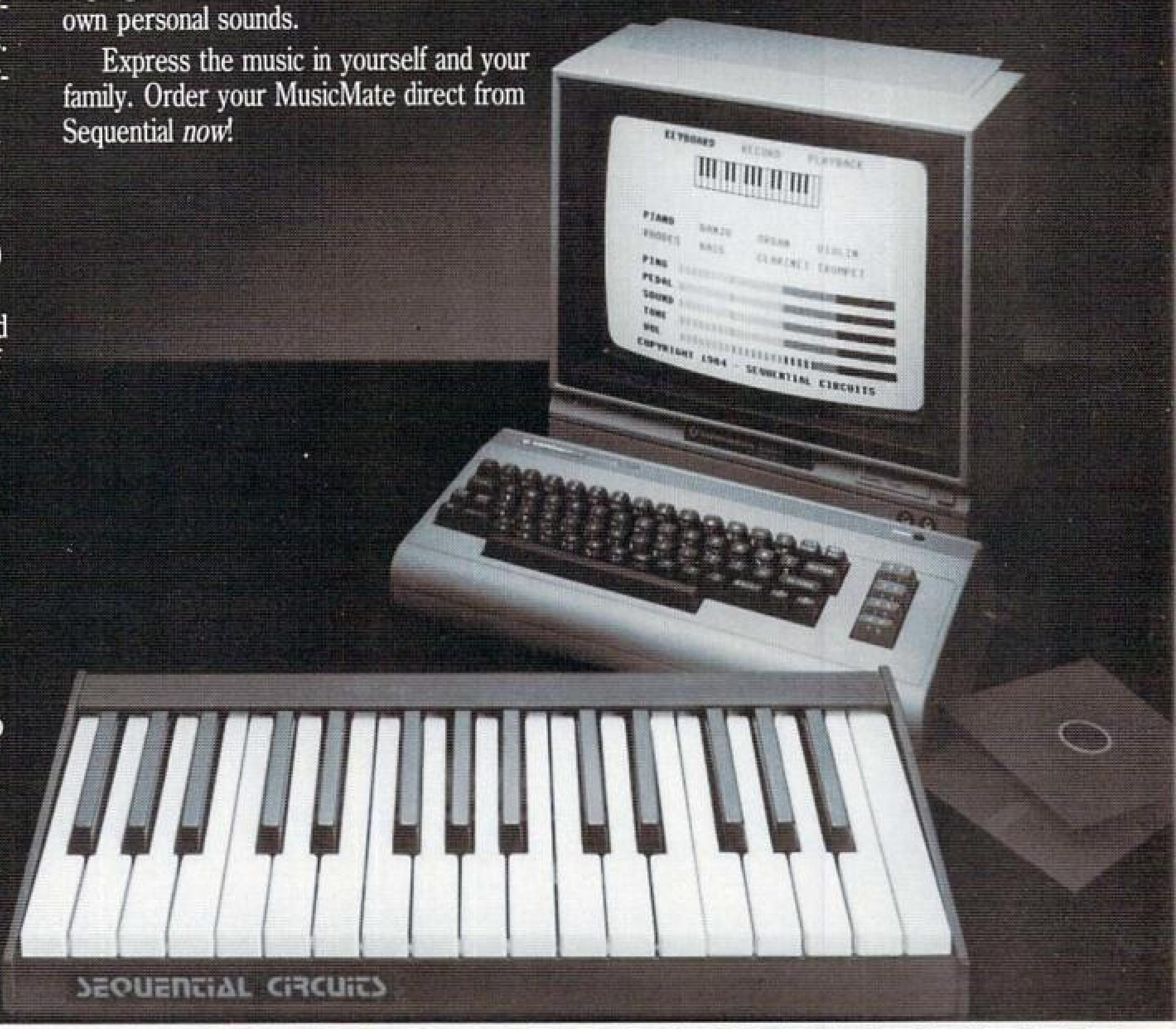
If you're not completely satisfied with the MusicMate keyboard, just return it within 10 days of receipt to Sequential for a full refund.

We Listen to Musicians.

SEQUENTIAL

For a complete Sequential catalog including decals, send $2.00 to: Sequential, Inc., 3051 North First Street, San Jose, CA 95134.



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Yes, I want to play my own songs on the MusicMate!

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Valid from: ______ to: ______

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Quantity			Price
______	MusicMate(s)	@ $99.00	______
______	SONG BUILDER	@ $39.95	______
______	SONG EDITOR	@ $39.95	______
______	SONG PRINTER	@ $39.95	______
______	SOUND MAKER	@ $39.95	______
		Shipping and Handling	$4.00
		CA residents add 6.5% Sales Tax	______
		TOTAL PRICE	______

If not completely satisfied, return MusicMate to Sequential within 10 days for full refund.
(Sorry, no returns on computer software, once opened)

Circle Reader Service No. 38

uential, 3051 North First Street, Dept. P, San Jose, CA 95134 Or, use our orde hit F1 to dump the constructed screen to the printer. The screen that was printed can be edited at any time, even after it is printed.

```
5 A$=""
10 GET B$:IF B$=""THEN 10
20 IF B$=CHR$(133)THEN 40
30 PRINT B$;:GOTO 10
40 OPEN 4,4:Z=1023:FOR Y=0 TO 24
   :FOR X=0 TO 39:Z=Z+1
50 CH=PEEK(Z):IF CH>=128 THEN
   CH=CH-128
60 IF CH<32 OR CH>95 THEN CH=CH+64
   :GOTO 90
80 IF CH>63 AND CH<96 THEN CH=CH+32
90 A$=A$+CHR$(CH):NEXT:PRINT#4,A$
   :A$="":NEXT:CLOSE 4:END
```

By adding:

```
5 PRINT"[LOWER CASE]";:A$=""
```

and changing line 40 to:

```
40 OPEN 4,4,7:Z=1023:FOR Y=0 TO 24
   :FOR X=0 TO 39:Z=Z+1
```

the screen dump will change to upper/lower case. If you incorporate these first two short programs, you will have the ability to edit a screen constructed by another program. Again, F1 will dump to printer.

```
100 GOSUB 60000
60000 A$="":GET B$:IF B$=""THEN 60000
60010 IF B$=CHR$(133)THEN 60030
60020 PRINT B$;:GOTO 60000
60030 A$="":OPEN 4,4:Z=7679
      :FOR Y=0 TO 22:FOR X=0 TO 21
      :Z=Z+1
60040 CH=PEEK(Z):IF CH>=128 THEN
      CH=CH-128
60050 IF CH<32 OR CH>95 THEN CH=CH+64
      :GOTO 60070
60060 IF CH>63 AND CH<96 THEN CH=CH+32
60070 A$=A$+CHR$(CH):NEXT:PRINT#4,A$
      :A$="":NEXT:CLOSE 4:RETURN
```

```
100 GOSUB 60000
60000 A$="":GET B$:IF B$=""THEN 60000
60010 IF B$=CHR$(133)THEN 60030
60020 PRINT B$;:GOTO 60000
60030 A$="":OPEN 4,4:Z=1023
      :FOR Y=0 TO 24:FOR X=0 TO 39
      :Z=Z+1
60040 CH=PEEK(Z):IF CH>=128 THEN
      CH=CH-128
60050 IF CH<32 OR CH>95 THEN CH=CH+64
      :GOTO 60070
60060 IF CH>63 AND CH<96 THEN CH=CH+32
60070 A$=A$+CHR$(CH):NEXT:PRINT#4,A$
      :A$="":NEXT:CLOSE 4:RETURN
```

Question: How can I access my college computer with my computer so I can program at home?

Answer: To access a mainframe computer, you must connect a modem for telecommunications to the user port in your computer, then connect the cord from the modem to your telephone. Next you run a terminal program (preferably a machine language program since it is faster) such as the 64 Term and VICTerm I which come with your Commodore modem. Then you dial the telephone number for the mainframe computer you are contacting. When you hear the high-pitched tone you are connected. With the VICModem, you now disconnect the handset from your phone and use the cord from the phone to plug into the modem. The AutoModem is already connected. At this point your computer becomes a terminal controlled by the mainframe computer. For instance, if the mainframe uses COBOL, FORTRAN, Pascal, etc., your terminal will have those capabilities for as long as you are connected. This will allow you to use the storage and printer of the mainframe while you do programming at home. It's a great feature for college students who have braved those lines outside computer rooms. Programming courses become easier when your time isn't limited.

Question: I get loading and saving errors when I use my datassette. When I plug the power cord into the computer, there is a wire with pins on the end, connected to the power cord. Must this cord be connected to something to make the datassette work?

Answer: First of all, the wire on the power cord is a grounding wire. When using the datassette with the VIC 20 or the 64, it is not used. Simply wrap it around the cord and secure it to keep it

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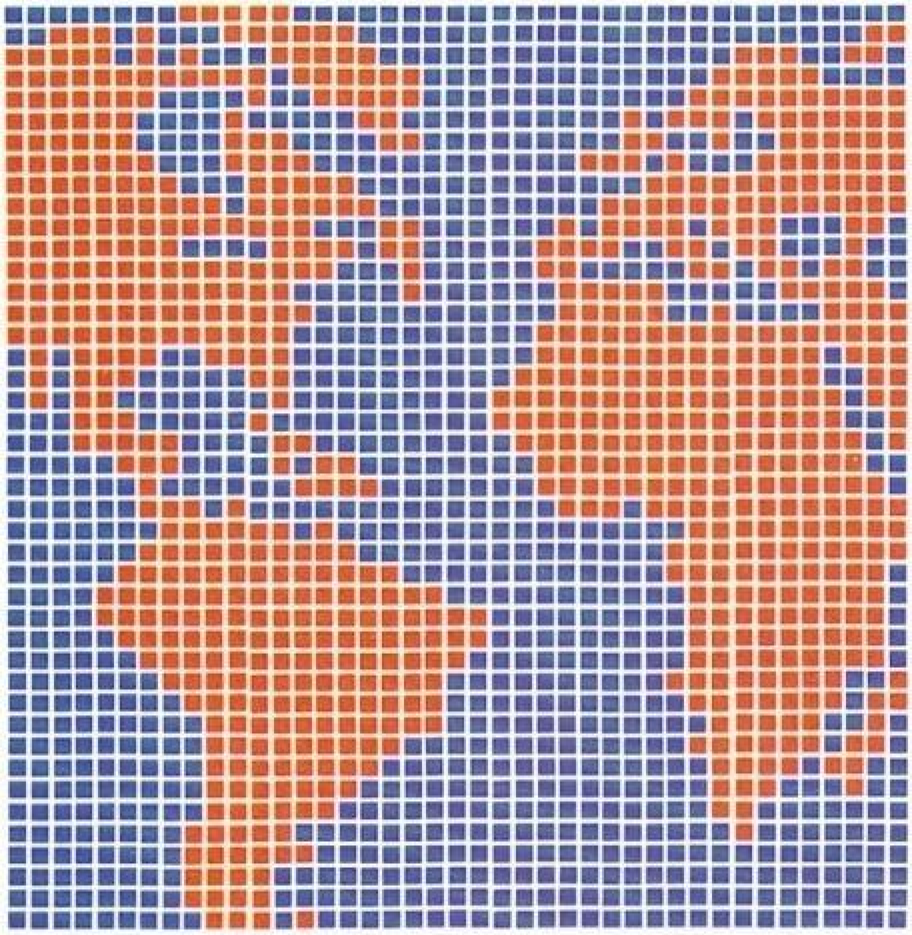

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The Company that had the foresight and imagination to design and build more computers for home, business and education than any other will be presenting the most farsighted and imaginative show to date with exhibitors from around the World.

The 1983 Canadian World of Commodore Show was the largest and best attended show in Commodore International's history. Larger than any other Commodore show in the World and this year's show will be even larger.

World of Commodore II is designed specifically to appeal to the interests and needs of present and potential Commodore owners.

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world of
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Circle Reader Service No. 25

out of the way. The grounding wire was used only with the older business machines. The FCC regulations are often different for business computers and home computers. Originally, the datassette had to be grounded on all business machines when used in a home to abide by these regulations. Since this is no longer the case, the grounding wire is no longer used.

When working with the datassette, you must remember that it is sensitive to radio emissions or magnetic fields. The TV emits a strong signal which can cause loading and saving problems on the datassette. Before you assume that your datassette or computer is defective, try relocating your datassette away from the TV (at least two feet). Also, be sure to keep tapes away from the TV, telephone or any other magnetic device (this includes any appliance that has a motor). Tapes and disks can be erased.

Question: Why can't I print graphics on my 1526 printer?

Answer: The 1526 printer will print dot-programmable graphics the same as the 1525 and MPS-801 printers. However, the 1526 will print one programmable character per line. But this character can be repeated up to 80 times which works great for a border.

To program a character, you must turn on bits within the 8 × 8 dot matrix in the printer. This is done the same way you turn on sprite bits. Calculate from top to bottom, in descending order, the values of 2↑N. (See Figure 1). For example, 2↑4 = 16 and 2↑7 = 128. This value is the same for every bit across that line. When you turn on bits, the value is determined by adding these bit values vertically. For example, to get the value of 60 in the first position you will be turning on four bits. The values are the powers of two. Therefore, you would add:

2↑5 + 2↑4 + 2↑3 + 2↑2 =
32 + 16 + 8 + 4 =60

The last value of 20 would be calculated the same way. Two bits are turned on:

2↑4 + 2↑2 = 16 + 4 = 20

These values are then entered as CHR$ values. Here is a short program that will print the Commodore logo across 80 columns. Notice the CHR$ values in line 30.

```
10 OPEN 4,4,0: REM OPEN A MAIN
   CHANNEL FOR PRINTING
20 OPEN 5,4,5: REM OPEN A CHANNEL TO
   SEND CUSTOM CHARACTER DATA
25 FOR I=1 TO 7:PRINT#4,"1234567890";
   :NEXT
26 PRINT#4,"1234567890"
30 PRINT#5,CHR$(60)CHR$(66)CHR$(129)
   CHR$(129)CHR$(231)CHR$(20)CHR$(20)
45 FOR I=1 TO 80:PRINT#4,CHR$(254);
   :NEXT
46 PRINT#4,CHR$(254)"COMMODORE"
48 PRINT#4,CHR$(254)"COMMODORE"
50 CLOSE 4:CLOSE 5
```

The CHR$(254) is the command to print a single programmable character. The secondary address #5 is the channel to which you send data for custom character sets.

Another difference between the 1526 and the 1525 and MPS-801 are two character strings. CHR$(16), which is the tab command, and the CHR$(27), which is an escape command, are used in programs to set up graphics. The 1526 doesn't understand these commands. This is why the printer test on the demo disk will give different results from the 1525 for test #5, #8 and #9. The test was not designed for the 1526. It is also why graphic programs such as LOGO won't print on the 1526.

The 1526 will also do any keyboard graphics.

Question: Where can I get my computer fixed when it is out of warranty?

Answer: First of all, check your local phone directory for an authorized Commodore dealer (check the yellow pages under computer dealers). If you can't locate any in your area you may return your unit to the Commodore Service Department at 1200 Wilson Drive, West Chester, Pennsylvania 19380. When a unit is out of warranty there is a flat rate charge involved. This rate, which is a repair or replace rate, depends on the type of unit. Here is a list of flat rates:

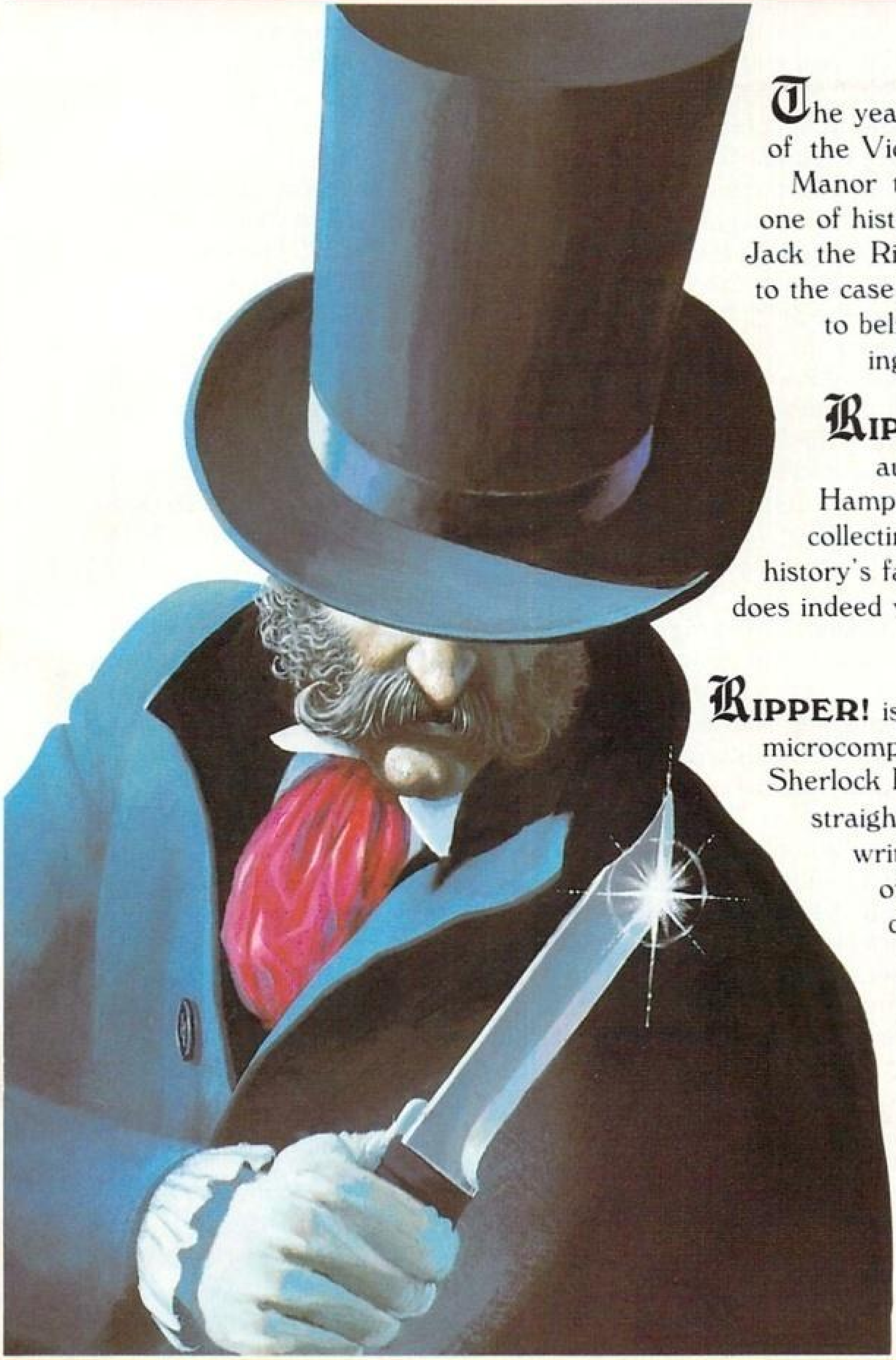
Printers: 1515, 1525, 1525E, MPS-801, & 1526	$75.00
Printers: 1520	45.00
VIC 20	35.00
Commodore 64	55.00
PET 64, SX-64	95.00
Datassette: 1530	35.00
Disk drive: 1540, 1541	85.00
Color monitor: 1701, 1702	95.00
VICModem: 1600	30.00
AutoModem: 1650	45.00

When sending in a unit, be sure to include a check for the proper amount made out to the Commodore Service Department, along with a letter explaining the problem. Commodore will return your unit by UPS along with a 90-day warranty.

If there is a problem with a unit still in warranty, first return it to the dealer where it was purchased. If this is impossible, it may be sent to the Commodore Service Department at the same address. However, when any warranty work is to be done, a copy of the proof of purchase and a letter explaining the situation must accompany the unit. No work

NEW! A game of mystery and adventure

RIPPER!



The year is 1900 and some of the most famous of the Victorian era have gathered at Hampstead Manor to lend their scholarly minds to solving one of history's most fascinating mysteries: who is Jack the Ripper? Scotland Yard has assigned you to the case, and the latest series of clues lead you to believe that the Ripper—in a feat of insane ingenuity—stalks Hampstead Manor itself.

RIPPER! is an intriguing adventure with audio and visual enhancements. Prowl Hampstead Manor, exploring its ancient halls, collecting clues and hints, and meeting some of history's famous people. But beware: if the Ripper does indeed walk among them, you must watch your back as well!

RIPPER! is a solitaire game between you and your microcomputer. Match your deductive skills with Sherlock Holmes. Discover who the man is in the straight jacket and why is that Doctor always writing about dreams? Unravel the mystery of the Giant Rat. Should you trust that dwarf? The answers lie within RIPPER!

RIPPER! is ready to run on the Commodore 64® system with disk drive. Available for $25 at leading Computer and Hobby Stores everywhere, or call toll-free: 1(800) 638-9292 for more detailed information. When you call, please ask for Operator R.

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can be done on any unit without a check or proof of purchase.

Question: Can you get an 80-column screen on the 64 when working with a modem?

Answer: Yes. There is a free program available from Commodore called Term 80. This can be downloaded from CompuServe. Go to the Programming SIG (special interest group) in the menu from CompuServe, then at any ! prompt type: GO CBM 310. At a function prompt, type: IN XA8 (for database #80). This is the telecommunications database. The complete title of the program is "Term 80 VT52, 80-column Terminal Emulator for the C64". This program will give you the option of turning the 64 into a 40- or 80-column semi-intelligent ASCII terminal. To use this program, however, you must be accessing a mainframe with the following protocol:

300 or 1200 baud, eight bits data word length, one stop bit, full duplex, no parity and an x-line handshake.

The directions for using this program can be obtained by asking for documentation. At a ! prompt type: Bro term 80.doc. This will give you the keywords and a description. Then for the disposition, you would either Read (R), Download (D) or go back to the terminal (T). The command "dow term80.doc" will download the documentation.

Question: What is on the disk Bonus Pack for the Commodore 64?

Answer: The disk Bonus Pack contains 31 utility programs which can be valuable in all aspects of computer use. The first program is called C64 Menu. This allows you to view the complete menu on disk at your pace and load programs directly. One of the most valuable programs is the 1541 backup. This program will back up an entire disk without having to load and save each individual program. Make sure to use a unique ID#. Just follow the flashing prompts on the screen. When you hit the return, the next procedure is executed.

There are also a variety of other utility programs. For instance Change Disk allows you to change the device number on a disk drive with the software method. Copy-All 64 will copy programs or entire disks between drives (example device #8 to device #8). Dump displays a program or file in its hexadecimal format. Load Addr will display in decimal format the location at which the program began when saved. Supermon 64.v1 will aid a programmer with testing and writing machine language programs. The Dos Wedge 5.1 (which is executed by typing SYS52224 when the initial ready comes up after loading) allows you to use abbreviated commands with the disk drive.

Besides utility programs there are various games such as Arrow, Demo Joystick (which tests the joystick port on the computer), Labyrinth and Lemonade.

Also included are graphic programs, such as Character Editor, Sprite Editor and Color Test, as well as sound programs, such as Sound Effects and Organ. These are great ways to test your computer's capabilities.

But there is still more. For the education minded, there are Bits and Bytes and Disk Commands, which are fantastic for a crash course in computing, and Snoopy Math for the younger generation.

For the home finance minded, there is an Amortization Tables program and a Mortgage program.

I'm sure you see now why it is called the Bonus Pack. Where else can you get this many useful programs on one disk? Check with your local Commodore dealer for availability.

Question: Where can I purchase Commodore software?

Answer: Software can be purchased through dealers, mass merchandisers or any place that sells Commodore products. Commodore doesn't sell directly to the consumer. However, we do operate the Commodore Computer Club. If you are having trouble locating a certain piece of software and you have a credit card, you can order the software by calling a toll-free number and placing your order, but you must have a part number to place orders. In Illinois call 1-800-924-8881, operator #1280. All other states call 1-800-323-1717, operator #1280. If you don't have a credit card, you can obtain a software brochure from Commodore and order by mail.

In addition to calling Customer Support at 1-215-436-4200 (Monday through Friday 9:00 AM to 8:00 PM and Saturday 10:00 AM to 4:00 PM). You can also get help through the Commodore Hotline. To do this, log onto CompuServe. At any ! prompt type in: go CBM 200. Voila! You will have your direct connection with our Customer Support Hotline. This is a great way to ask a question while it's on your mind at 11:30 PM.

Another super source for help is User Groups. A listing is published in every issue of *Power/Play* and *Commodore Microcomputers* magazines. User groups are end users who have organized to help each other through the vast maze of microcomputing. They can be very helpful.

It is now 8:05 PM Monday evening. The phone lines are silent, the computers are turned off and the last piece of software is tucked back into its cabinet. The room is strangely quiet now as the last Customer Support representatives sling their coats over their shoulders and head towards the door. But they'll be back tomorrow. **C**

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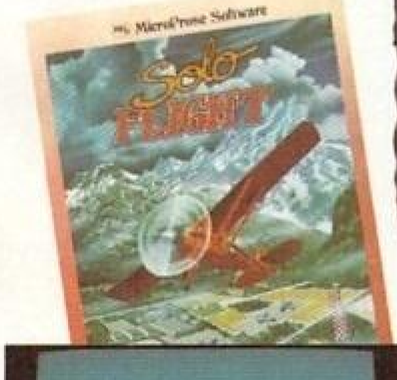

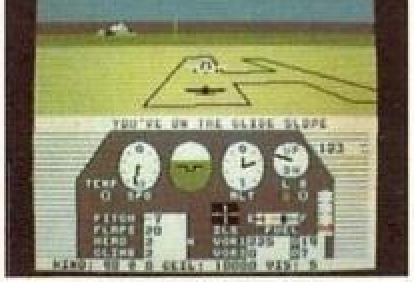

Commodore 64 Screen Picture

Major Bill has over 3000 hours of flying. He loves the sophistication of the SOLO FLIGHT simulation and its real life challenges of deteriorating weather, failing instruments, and overheating engines!! He knows the reality of flight — with SOLO FLIGHT he can bring it home!!

Bill Jr. has no real flying hours, but just moments after he plugs in his joystick, he's airborne, experiencing the fun and learning of flight. He loves the great 3-D graphics, the takeoffs, the touch and go's, and the NEW "INSTRUCTOR PILOT" option which enables the computer to give him flight instruction just like his fighter pilot Dad would!! Bill Jr. loves the fun of flying — with SOLO FLIGHT he has it!!

SOLO FLIGHT is a real flight simulator that includes VOR's, ILS, 21 different airports, VFR, and IFR flying. SOLO FLIGHT is easy to get started with, but you will get hooked on its Fun and Excitement!! Try to master all the challenges of SOLO FLIGHT. But be careful, because that may take many more flying hours than a Major has!!

SOLO FLIGHT is available for Commodore-64, APPLE, IBM, and ATARI computers. Suggested retail price is only $34.95. Find SOLO FLIGHT at your local retailer, or call or write for MC/VISA, Money Order, or COD orders. Add $2.50 for postage and handling (Int'l, add $4.00 USD). MD residents add 5% sales tax.

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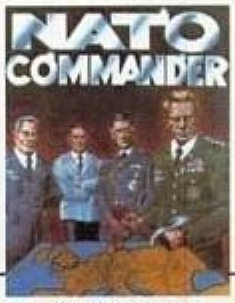

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Computer Song Writing Contest Judges Announced

Vince Fleming of Strangeland Music and Dan Seitz of Aleph-baze Music have announced they will join the panel of judges for EnTech Software's First Annual Computer Song Writing Contest. Aleph-Baze and Strangeland are music publishing companies in the Los Angeles area. Other judges to be named may include executives from CBS and Capitol Records.

EnTech's Computer Song Writing Contest, the first of its kind, will award $1,000 and free studio time to the best musical composition written on the Commodore 64 with EnTech's *Studio 64*. Studio musicians, an arranger and a producer will help turn the winner's composition into a hit song.

Contest entry blanks are available at participating dealers and entries will be accepted through December 1, 1984. For more information, contact Computer Song Writing Contest, P.O. Box 185, Sun Valley, CA 91353 or call 818-768-6646.

And the Winners Are . . .

These Software Showcase Winners were selected from among those pieces

Company	Program Name	Description
Access	Beach-Head	Six full access screens actually makes several games in one
Broderbund	Matchboxes	Challenges and sharpens memory retention skills
Commodore	Jack Attack	Combines cartoon animation with strategic challenge
Commodore	Micro Cookbook	Menu driven program designed to help plan meals
Commodore	International Soccer	Three-dimensional animation and authentic soccer play action
Computerose	Childpace	Strengthens parent/child relationships
Creative	Dragonhawk	Requires constant attention to manipulate the character on the screen
Creative	In the Chips	Puts player in control of running small software company
Creative	Moondust	Player controls music and graphics
Electronic Arts	Music Construction Set	Computer music program
Epyx	Fax	Unique in utilization of questions and answers
Epyx	Summer Games	Sporting events are accurately depicted and realistically represented
Human Engineered Software	Omniwriter/ Omnispell	Wordprocessor with integrated spelling checker, instant reformatting
Human Engineered	Cell Defense	Interactive simulation in biology
Human Engineered	HES Games	Player controls movements of athletes
Human Engineered	Turtle Toyland Jr.	Draw, compose music, animate objects to create filmstrip

Music, Education and Games for the 64 Headline Summer CES

The 1984 Summer Consumer Electronics Show in Chicago upheld its reputation as a dynamic, innovative assemblage of top-notch companies. Once again, both software and hardware developers showed an incredible array of products for the Commodore 64. Here's a taste of the best we saw at the show.

MELODIAN
CONCERT MASTER™
MELODIAN
RHYTHM MASTER™
MELODIAN
Melody Master™

The key words this year at the Summer CES were no doubt music, education and games. Every company enthusiastically introduced at least one of the above for the 64 and contributed to the overall electric atmosphere of the computer industry that heralded, "This is where it's at!"

The Best of 1984

submitted during the 1984 International Summer Consumer Electronics Show:

Company	Program Name	Description
International Tri Micro	The Rug Rider	Acquire magical powers to encounter genie in last round
Muse	Super-Text	Professional quality word processing package
Muse	Space Taxi	Whimsical multiaction screen predicaments
Practicorp	64 Doctor	Isolate troublesome hardware problems
Precision	Superbase 64	Relational database management system
Quicksilva	Falcon Patrol	Aircraft theme featuring fast action
Screenplay	Pogo Joe	Color animation, graphics and music
Sight & Sound	Musicomp-Music Processor	Teaches basics of creating music
Softsync	Model Diet	Creates individual health profile
Softsync	Computer Mechanic	Computerized automotive instruction and diagnostic tool
Softsync	Dancing Feats	Beginner music computer programming
SubLogic	Flight Simulator II	Solid colors, 3-D graphics, eighty airports, complete instrumentation and avionics
Sunrise	Campaign '84	Graphic strategy program converts electoral process
Timeworks	Data Manager 2	General information storage and retrieval system
Timeworks	Dungeon of the Algebra Dragons	Challenging way to develop algebra skills
Waveform	Musicalc	Plays professional sounding music

Music

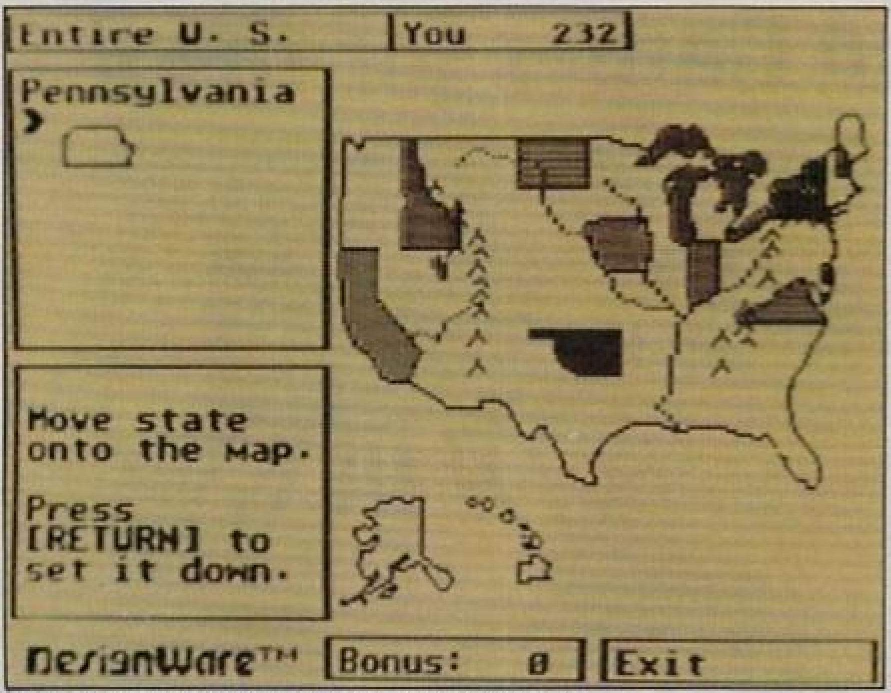
Melodian introduced an inexpensive, easy to use and unique musical keyboard and software system which is expected to have a major impact on the home computer industry. In addition to playing music, the instrument has a capacity for teaching and composing music and reproducing the sounds of numerous musical instruments.

The 18-inch, three-octave 37-key keyboard is similar in appearance to a portable electric organ. It operates by plugging into a 64 to use the microcomputer's synthesizer to reproduce 16 instrumental sounds.

Sight & Sound Music Software introduced the Kawasaki Synthesizer, the Incredible Musical Keyboard and a range of other musical software.

Professional jazz musician Ryo Kawasaki demonstrated the Rhythm Rocker and the Kawasaki Synthesizer for the press. Both programs are compatible with the 64. They provide a richness of musical expression comparable to that which is attainable with professional synthesizer instruments.

(Continued On Next Page)



Move state onto the map.

Press [RETURN] to set it down.

States & Traits *is an educational geography game*

Kawasaki, whose group, The Golden Dragon, is familiar to audiences in New York, Los Angeles, Tokyo and in Europe, wrote the Kawasaki Synthesizer music software.

In effect, Sight & Sound music software turns the computer into a musical instrument that anyone can play. The Kawasaki Synthesizer offers potentials for both the beginner and the advanced performer and composer.

The new software provides 99 preset musical sounds and advanced color graphics. It lets players change the musical sound and expand their skills.

Sight & Sound's Incredible Musical Keyboard fits directly onto the computer terminal. With its own software program and easy-play instruction set, it simulates a keyboard instrument and enables the beginner to start playing immediately. The Keyboard provides a key link between the computer and the player making or learning music.

Education

DesignWare's *States & Traits* challenges families and children to hone their knowledge of United States geography, history and current trivia.

The map-maker/user has two options: in "states," he or she charts states into their proper locations on a colorful master map. In "traits," the cartographer's challenge is to plot topographic features into their correct geographic positions and to answer questions about a multitude of U.S. landmarks, history facts and trivia.

Players can choose to test their geographic knowledge of the whole United States or concentrate on one of four regions.

If the player selects states, the labeled outline of a state appears on the screen next to a map of the total U.S. or a region. Using a joystick or keyboard, the player then leads the state to its correct position on the map. The state appears to march across the country as the player moves and charts its course. Using unlabeled states encourages recognition of state shapes and adds to the competition. Master maps showing only rivers and mountains without state boundaries even keeps geography geniuses on their toes.

In the traits portion of the game, a map and a question appear on the screen. State capitals, neighboring states, historical facts and current events are all fair game. To answer, the user draws an arrow to the correct state. For instance, to answer, "What state claims fame as the boyhood home of Abraham Lincoln?," the player points to the state of Illinois.

Children (or their parents) can add their own geography-related questions into the game. Kids can study anything from state senators to the major industries or natural resources of their own state. Using a bank of 21 icons, the geographer becomes an urban planner, assigning oil wells to Texas, cows to Uncle John's farm in Virginia and planting trees in the desert of Arizona where the family vacations.

The entire family can test their reservoirs of geographic trivia by answering questions provided and adding their own.

Players score points for placing states and answering questions correctly. Bonus points encourage kids to work faster; colorful graphics and sounds hold children's attention and reward right answers. A missed response is met by the flashing of the correct answer.

States & Traits covers a significantly wider variety of geographic concepts than the few other geography games currently available. Unlike other games that rely on typing in answers, *States & Traits* puts the user in a more active role—moving mountains, scooping out valleys and forging into uncharted territories.

Another product by DesignWare is the *Notable Phantom*, which teaches children basic keyboard and note reading skills as they compete against a slew of specters, spiders and the famous phantom himself.

The *Notable Phantom* is the only music education game available that uses an exclusive, realistic and durable keyboard overlay, with more than an octave and a half of black and white keys so that children learn music in a realistic way.

Haunted house ghouls lead players through exercises to identify note names and positions on a musical staff and keyboard and to train the ear to identify different tones depending on which lesson plan the user selects.

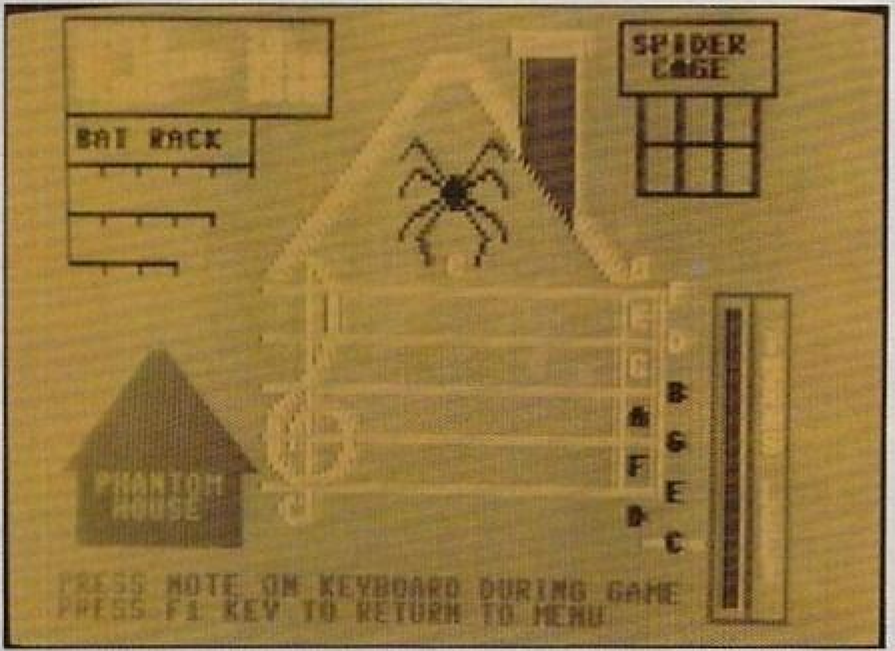
A wispy ghost plots a note on a musical staff in one exercise. The player must strike the correct note on the keyboard overlay before the note-napping ghost spirits it away. Properly played notes turn into bats that flap their way up to the bat rack high in the rafters.

Players must also outsmart speedy spiders who tote names onto the screen. If the user plays the proper note quickly enough, he traps the spider in a cage.

Children learn to read music using a songbook of favorite tunes which is included in every game. A special feature allows budding composers to save their own song creations and play them back later.

Maximus introduced *Safetyline*, software that combines fun with important lessons about safety. Narrated by Max the Cat, the first package in *Safetyline* shows your child how to cross streets safely and what to do when lost. Four intriguing games reinforce the safety tips: Streetcross, Hidden Words, Tipsmatch and Zoomaze.

Sierra and Walt Disney Telecommunications announced that the companies have reached agreement to co-



PRESS NOTE ON KEYBOARD DURING GAME
PRESS F1 KEY TO RETURN TO MENU

Notable Phantom *teaches basic note-reading skills*

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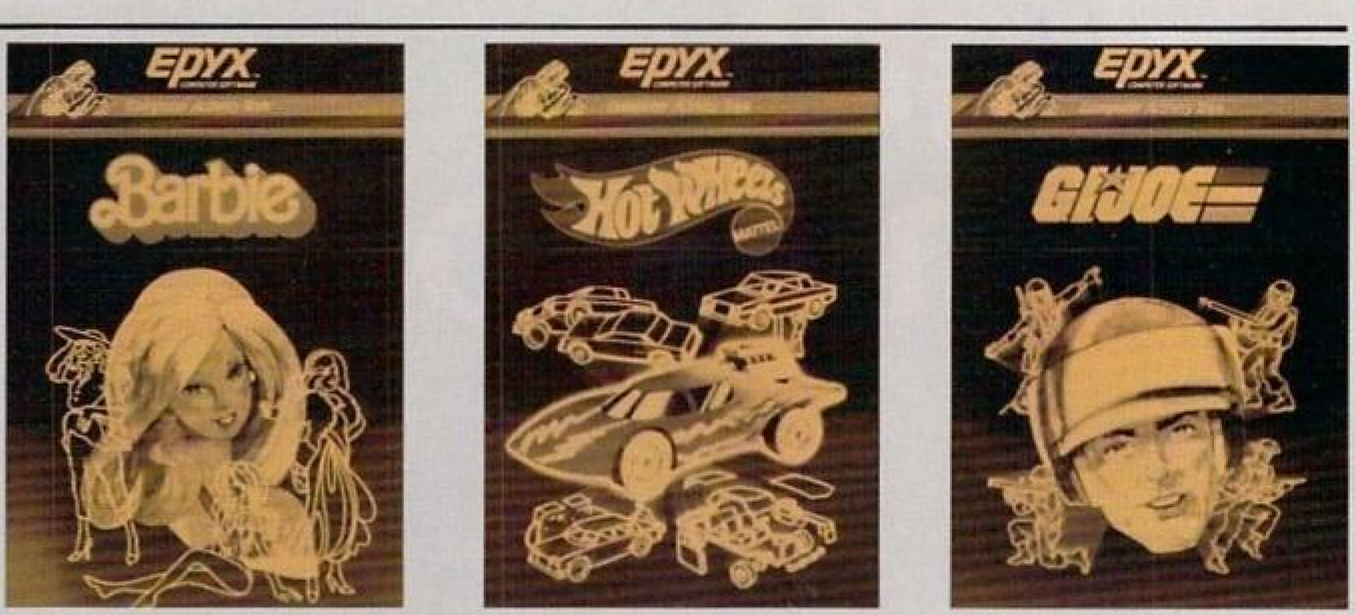

New games from Epyx feature well known licensed characters.

develop software based on the Disney characters for five education games. The first project, *Donald Duck's Bakery*, develops math skills. Other educational games feature Winnie the Pooh and Goofy.

Donald Duck's Bakery shows Donald Duck getting his first job at Scrooge McDuck's factory. Donald has only a few responsibilities at first, but he is expected to learn the business and to follow someday in Uncle Scrooge's successful webprints. His success will be determined by the bakery's efficient and profitable operation.

Children will help Donald Duck—beginning with simple tasks and progressing to more responsibility—while learning what it takes to do the job well. From simple counting skills through all the details of running a bakery, children learn and can demonstrate knowledge of counting objects, taking measurements, setting controls such as timers and clocks, computing sales, making changes, taking inventory, ordering supplies and dealing with customers.

Random House entered the home computer software market with an exciting new line of programs featuring the famous Peanuts cartoon characters. Marketed through the newly established Random House Electronic Publishing Division, the six new Peanuts programs are educationally-oriented entertainment software. At CES time, however, Random House was not offering these programs for the 64.

Epyx kicked off the introduction of its licensed *Barbie, Hot Wheels* and *G.I. Joe* Computer Activity Toys. The Activity Toy line will feature the new line as an alternative to arcade style games which often experience quick wear-out and are a substitute for educational games that often don't generate enough interest.

Games

Infocom introduced the interactive fiction game *The Witness*. In interactive fiction, the course of a story is controlled by responding to it in the form of conversational English commands typed into the computer. There are not graphics involved, only words which create mental images far more powerful than graphics could possibly be. The choices made while playing the game are limited only by your imagination.

Professional Software announced its premier entertainment software product *Trivia Mania*. Based on thousands of challenging trivia questions, *Trivia Mania* is the first computerized game to bridge the gap between entertainment and educational software for adults and children.

Americans have had a passion for trivia questions for decades. Trivia's video popularity can be traced to the television game shows of the 1950's and 1960's such as "The $64,000 Question," "Name That Tune" and "College Bowl." Indeed, the current popularity of trivia-oriented board games is well recognized.

Recent reports from "20/20," "CBS Morning News," and *TIME* magazine attest to the rapidly growing popularity of trivia-oriented games. In 1981, trivia-oriented games and book sales reached the $600,000 mark worldwide. By 1983, sales reached $70 million and 1984 projected sales are estimated at an incredible $1 billion.

The premier version of the game will consist of approximately 3,500 questions on diskette and in printed form, in three levels of difficulty and in seven categories: Science and Technology, Geography, History, Sports, Films & Entertainment, Famous People and Nature & Animals. Players (or teams) must fulfill user-selected point requirements in five of the seven categories, answer a "Category Completion Question" and then a final "Game Winning Question" in order to win the game.

The software company is also developing a series of specialty add-on diskette packages that include subjects such as "Super Sport," "Movie Madness," "What's in a Word" and "Educational Learning Diskettes," designed specifically for the educational market. These learning diskettes will contain questions and answers in various academic subjects such as English vocabulary, American history, geography, mathematics and several sciences.

First, a Master of the Game is chosen by all players to control the computer's activities. The elected master then enters information on each player or team. A unique aspect of *Trivia Mania* is its ability to handicap all those trivia experts. Individual players can be handicapped by selecting a larger required number of points per category, by selecting a shorter time period in which to answer their questions and by allowing *Trivia Mania* to randomly choose their subject categories. These three handicapping methods can humble even the most ambitious trivia expert in the world—giving everyone a chance to win.

Trivia Mania was also designed to be used without a computer. The packaging includes the "Trivia Mania Book of Questions and Answers," as well as "Trivia Mania Tally Scoresheets." The "Book of Questions and Answers" contains directions on how to play the game without a computer. This allows *Trivia Mania* to be played in a car, at the beach, on vacation, over cocktails, almost anywhere, anytime. The ability to use *Trivia Mania* without a computer makes this entertaining

Trivia Mania *challenges both children and adults.*

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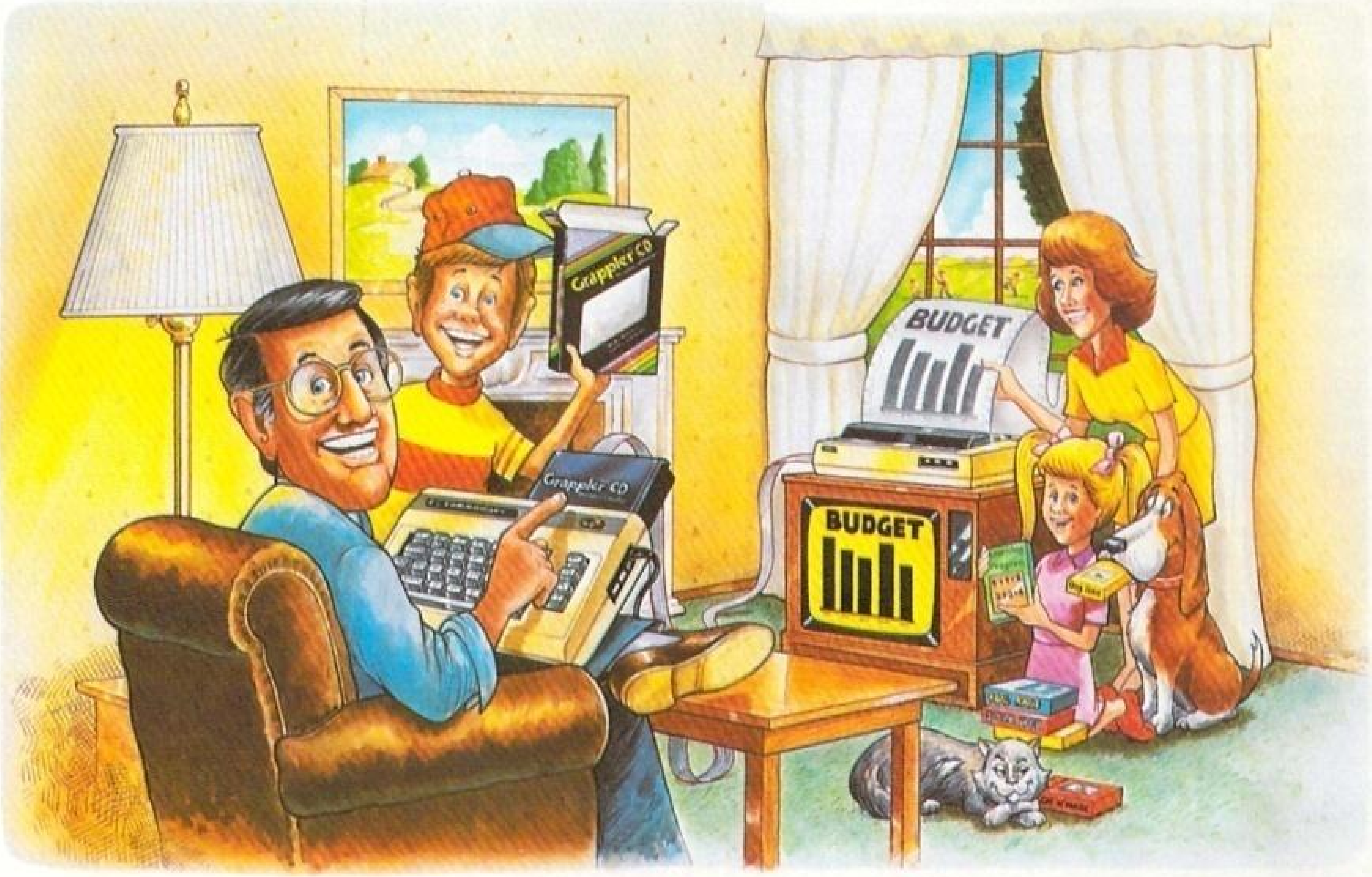

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game available to virtually everyone. Professional Software is even offering an end user rebate to all non-computer users who send the *Trivia Mania* computer diskette back to the company.

A series of interactive computer adventure games inspired by the novels of best-selling science fiction authors was announced by Trillium. Based on the works of such popular writers as Arthur C. Clarke, Robert Heinlein and Michael Crichton, the games combine text and full color graphics in adventures to other times and places.

Six Trillium titles were released: *Rendezvous with Rama*, based on the book by Arthur C. Clarke; *Amazon*, by Michael Crichton; *Dragonworld*, based on the book by Byron Preiss and Michael Reaves; *Starman Jones* from the book by Robert Heinlein; *Fahrenheit 451* based on the book by Ray Bradbury; and *Shadowkeep*, from which a book has been adapted by Alan Dean Foster.

In all Trillium science fiction and fantasy adventure games, players assume the identity of the characters in order to embark on adventures and explore environments. Each game features professionally written scripts and high-resolution color graphics. The games understand hundreds of words so players can communicate with the computer in English. The games' complexity and levels of challenge make for upwards of 40 hours of play.

The plot-based games also have graphic clues and hints that make them easier to play than the bulk of adventure games currently available. Some even contain fast-paced arcade style games within the adventure games.

The best-selling science fiction authors cooperating with Trillium provided their creative abilities, stories and, in some cases, their script writing and software design abilities.

Michael Crichton, for example, wrote the entire script, worked directly with the graphic artist and designed the software for *Amazon*, a game where a player must go to the jungle to discover why a research trip mysteriously failed.

Along with the announced titles, Trillium will release games based on novels by Phillip Jose Farmer, Roger Zelazny, Alfred Bester and Harry Harrison in the near future.

Parker Brothers announced the newest adventures of Frogger in *Frogger II: Threedeep*. *Frogger II* features three distinct screens that take the high jumping amphibian underwater, over water and through the clouds as he sidesteps a bevy of foes including electric eels, snapping alligators, barracudas, sharks, hippos, Clyde the Dragon and a deadly prop plane. All make for perilous but challenging travels as players try to navigate Frogger safely to the haven of his home bay.

In the underwater screen, players find Frogger perched on a river bed ready to make his way across alligator and barracuda infested waters. Players must help the frog swim through the waters, taking care that the current, which grows stronger at higher levels, does not pull him to life threatening encounters. Friendly giant turtles occasionally provide a free ride out of troubled waters and free floating bubbles help him earn bonus points. Once near the surface, Frogger can either fill the log berths or climb onto the side of a log and emerge on the surface screen.

In the surface screen, the fast moving hopper must dodge obstacles on the river's surface, including alligators, submerging whales and unpredictable hippos, who may offer a free ride but can change their minds midstream and shake Frogger back into the underwater screen with a splash. Lilypads or baby ducks offer temporary sanctuary but swift moving sharks and protective mother ducks can send the tiny amphibian into the drink in a hurry. Frogger's goal is to either fill the life preservers pulled by the tug boats at the top of the screen or leap onto the back of the mother duck who will fly him to the air screen.

In the air screen, Frogger finds himself high above the clouds in a land inhabited by flying birds and butterflies. Players must bounce Frogger from his starting point on a large cloud trampoline, jumping him from bird to bird in an attempt to reach the safety of a cloud berth. On hand to foil his endeavors, however, are Clyde the Dragon, poisonous black butterflies and a deadly prop plane. Fluttering butterflies enable Frogger to capture bonus points—but at a cost. Each time he snaps a winged creature, a hole opens in the clouds; if Frogger bounces through this hole he will find himself falling through to the surface screen or all the way down to the underwater screen. A well executed hop onto a passing stork bearing a diapered baby frog can earn Frogger extra lives.

The player who successfully guides the frog to safety is rewarded with another more hectic round of play. The challenge intensifies on each successive screen as the player's skill at executing split-second maneuvers is put to the test.

Broderbund announced *Castles of Dr. Creep* which uses the latest computer technology to recreate the entertainment of old fashioned "B" movies.

Castles of Dr. Creep combines spooky sound effects, eerie music and creepy antagonists in a Transylvania setting to create an unusual but challenging arcade game that requires coordination as well as strategy. Thirteen mysterious castles containing over 200 rooms in interlocking 3D puzzles are filled with sinister surprises. Force fields, electrogenerators and meandering mummies are just a few of the surprises awaiting you.

The many layers of the game assure that players will be challenged for hours at a time. A single player can learn the easiest level in ten to fifteen minutes, but it will take several hours to master one of the more advanced levels. Two players will have twice as much fun discovering that cooperation rather than competition, is the key to escaping from the castles. The unique cooperative interaction required by both players makes this game the first truly two player product on the market.

Raid over Moscow was released by Access as the newest action packed video game that pits two superpowers against each other in nuclear war.

The Soviet Union has launched a nuclear attack on major cities in the United States and Canada, according to the game. Because the United States lies vulnerable after dismantling its nuclear arsenal in accordance with the SALT IV agreement, the Soviets have reason to believe a quick and decisive nuclear attack will win the Communists world domination.

The United States is hopeful it can stop the nuclear attack by destroying the Soviet Defense Center. American stealth bombers, capable of flying in Soviet air space without being detected, are the United States' only hope.

It is up to each *Raid over Moscow* player to act as U.S. station commander and lead the commandos on a virtual suicide mission into the Soviet Union. The military team must first knock out Soviet missile launch sites and then proceed into Moscow to destroy the Soviet Defense Center.

A player who recognizes he is racing against the clock will be more successful. American cities are being destroyed by the Soviet attack as the station commander learns how to effectively use rocket launchers and small disk bombs.

The visual graphics and sound effects of *Raid over Moscow* were meticulously developed to achieve a realistic wartime scenario.

Graphics

Activision introduced the Activision Pencil, a graphics package that virtually eliminates computer control and complex programming design. It is the first home computer software that frees the user to create anything he wishes in picture and sound

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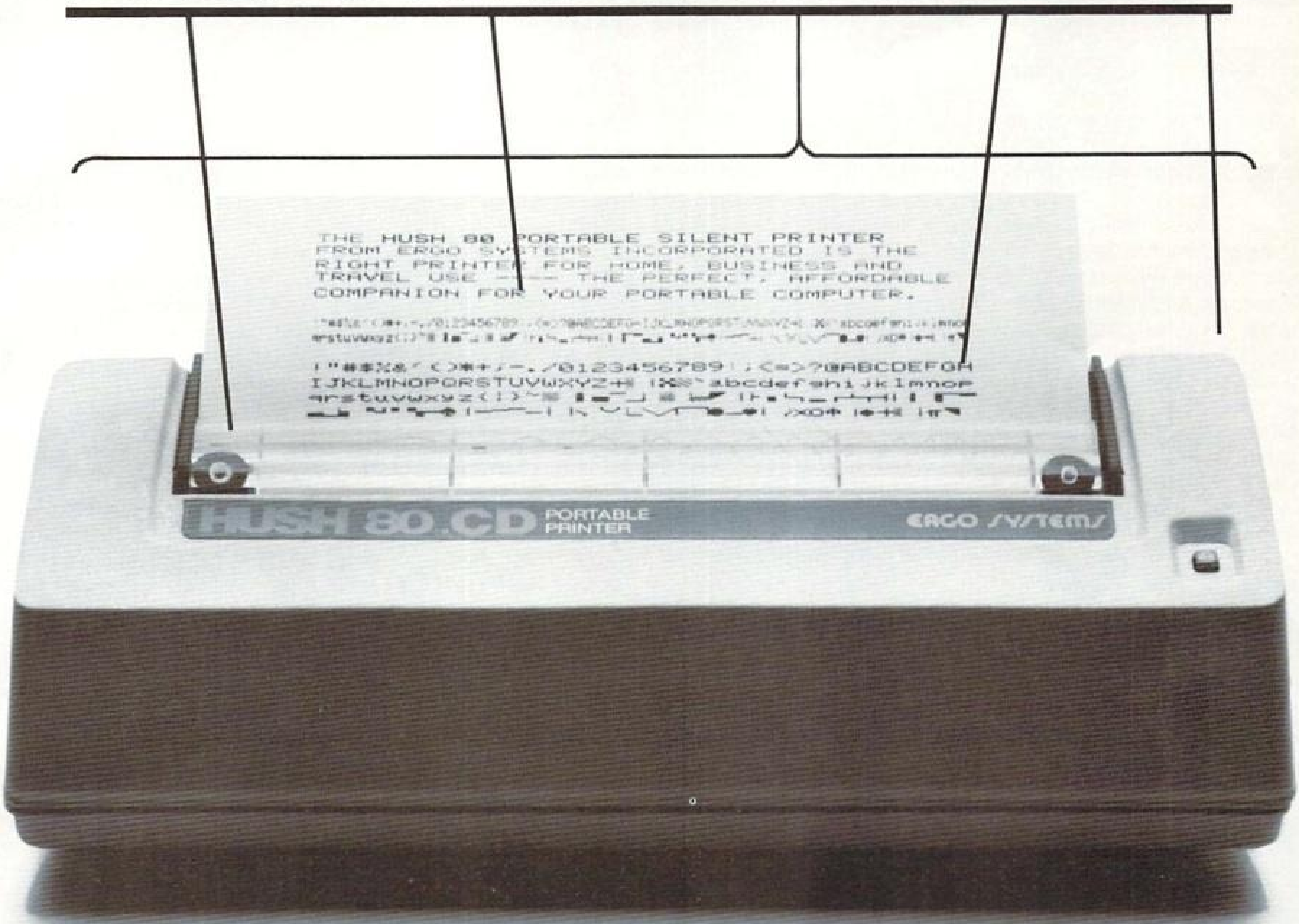

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The secret of the Activision Pencil is simplicity. It requires no artistic or computer programming experience to start and is the only software that gives the user the option of using the keyboard or creating entirely with a joystick, without ever touching the computer keyboard.

The user controls two screens. The first is a computer palette with more than 75 graphic and musical commands from which the user selects to create a set of commands (a program). On the second screen, or canvas, a yellow pencil, complete with eraser, executes the commands instantly.

To draw a perfect circle, for example, the user directs a cursor on the palette screen alongside the command, "Circle R-000". ("Circle" tells the pencil to draw a circle; "R-000" allows the user to choose its radius).

By pushing the joystick button, the user is able to alter the command. A nudge on the joystick changes "000" to the desired radius. Then, by simply moving the cursor to a box labeled "Run" and pushing the button, the Activision Pencil draws what most people can't: a perfect circle. Music can be added to accompany the drawing.

Futurehouse introduced its newest advanced graphic package for use with the Edumate Light Pen called *Peripheral Vision*. This advanced package amazes both novices and experts alike with its ease of use and sophisticated features.

Some of the features included: the ability to draw with 15 different colors using six brush widths; ability to interface with a printer to print your artwork; choice of 35 different textures or you can design your own textures; a fill command that can fill with textures or colors; mirror mode for a kaleidoscope effect; a zoom command to zoom in for detailed work, pixel by pixel; the automatic drawing of circles, squares and triangles; the copying and moving of shapes around the screen; the ability to adjust speed and accuracy of the light pen; and ability to place keyboard characters on the screen.

Special Interest

Batteries Included introduced its biofeedback monitoring system called *The Stress Manager* that is a true biofeedback loop which allows home computer owners to scientifically assess their thought patterns and physiological impulses to gain a deeper understanding of the factors which contribute to stress.

At the heart of the system is the highly advanced *Stress Manager* applications software which interprets data sent from the Galvanic Skin Resistance module. The G.R.S. module utilizes an unobtrusive hard wire interface between user and computer. This ensures accurate feedback and critical analysis in a language the lay person can understand. This method captures the user's vital statistics by a pair of fingertip pads that measure fluctuations in the skin's electrical conductivity.

Results are displayed onscreen in three detailed, yet easy to understand graph forms. The graphic analysis and all related data may be saved on the diskette and printer for future reference and comparisons.

As an added feature, *The Stress Manager* is supplemented with an audio cassette to assist the user in getting the most out of his biofeedback system. Methods of relaxation and stress reduction are also an integral part of the cassette.

Now ten year-olds can learn how the body defends itself from disease and adverse conditions caused by age, stress, drugs and alcohol with *Cell Defense*, a new software simulation program by Human Engineered Software.

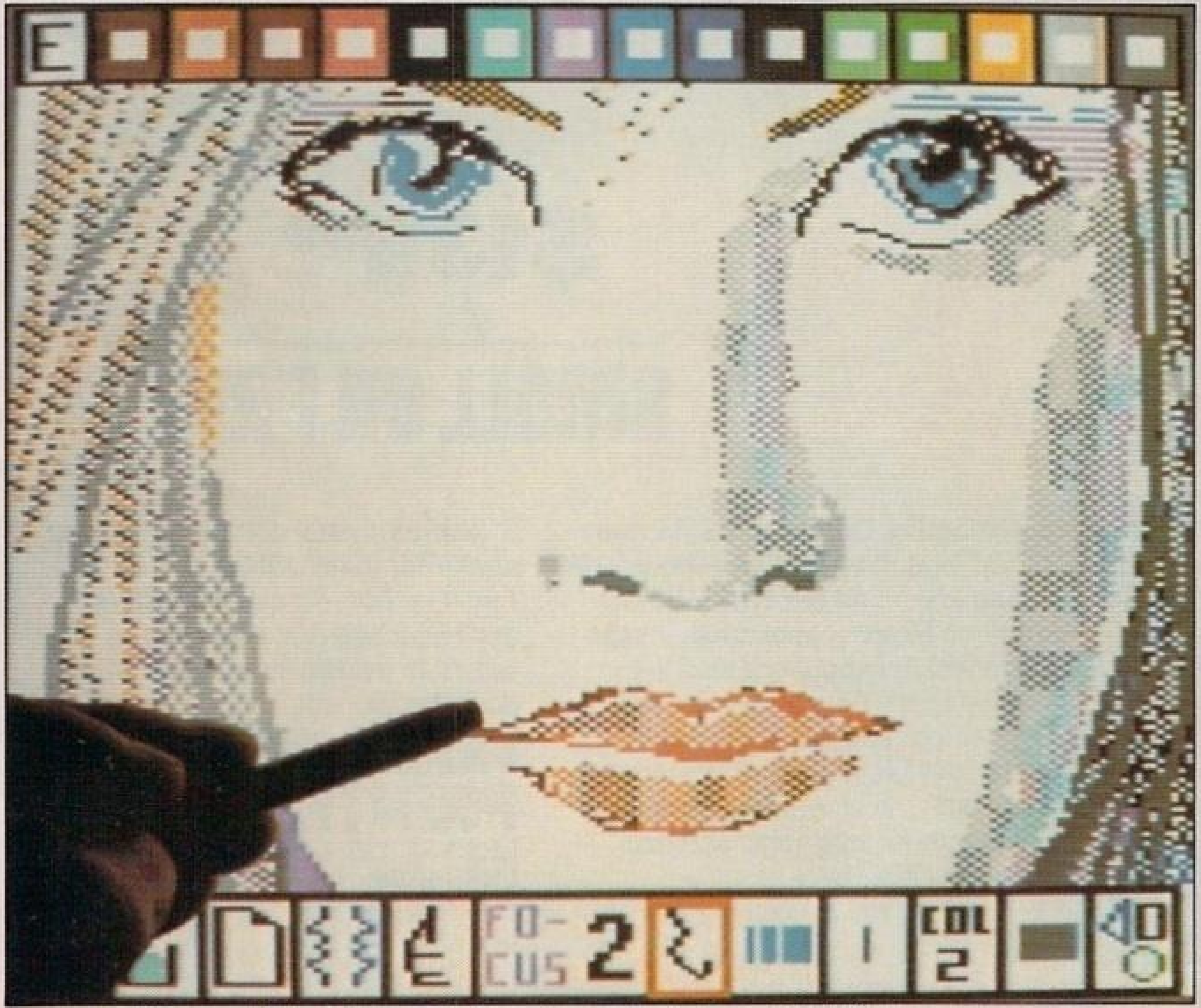
Cell Defense has multilevels to ensure continued interest and progressive learning. The program is portrayed in vivid colors and has sound effects that signal the user to action.

In the game, the user must control the cell's defense system to prevent the body from being destroyed by virus infections carried in the blood. To begin the program, users scan a cross section of the body deciding how many layers of cells will be managed at any one time.

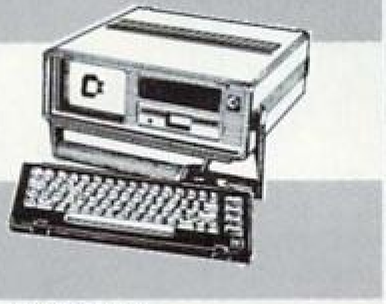
Taking into consideration the influences of age, stress, drugs and alcohol, the student determines the cell's ability to resist virus infection. Three types of cells need protection: skin, inner tissue and nerve. The user can choose from interferon, macraphages, T cells, B cells and antibodies as defenses to stop the virus. In addition, available options include three levels of virus difficulty—easy, medium, hard—as well as the disease's rate of reproduction and the speed at which it travels from one cell to another.

If the user is successful in saving the body from the viruses, a colorful message flashes on the screen: "Congratulations! The organism is saved!" If unsuccessful, a message in black letters says the organism is dead and gives the cause of death. The user is then invited to try again.

(Continued On Page 32)



Futurehouse's Peripheral Vision *software is designed for use with the Edumate Light Pen.*



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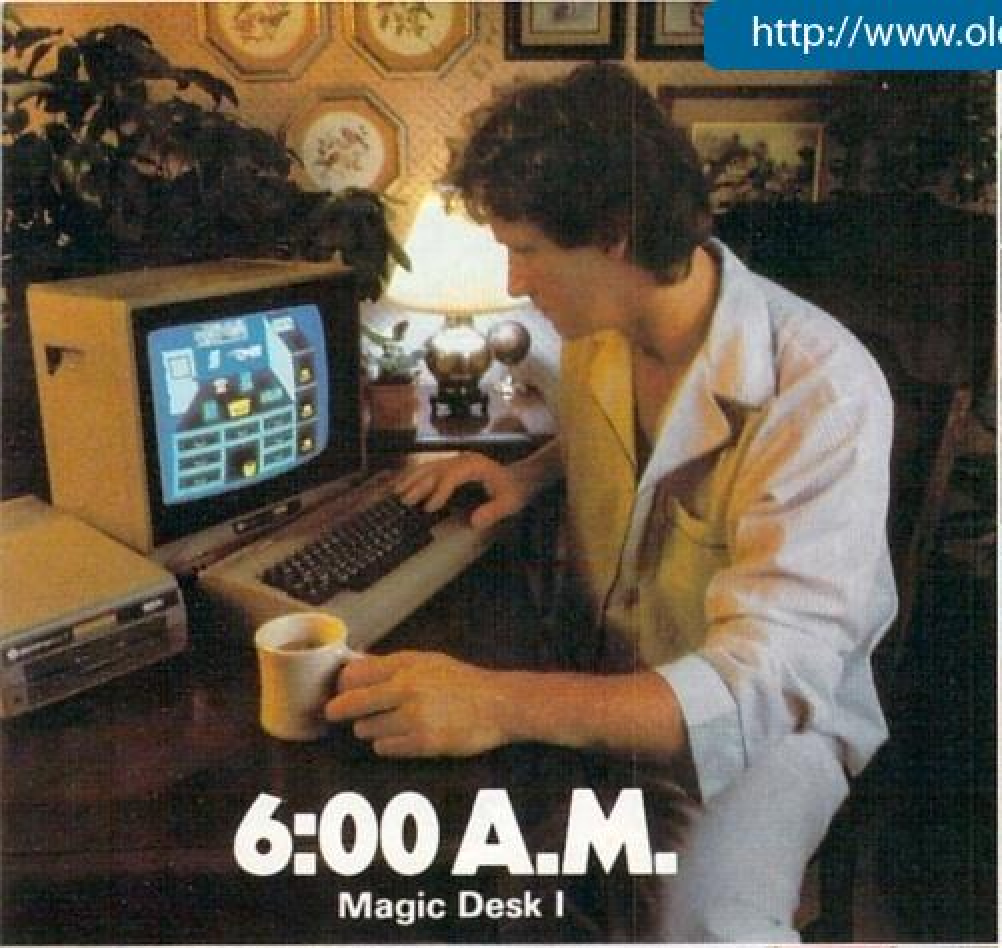

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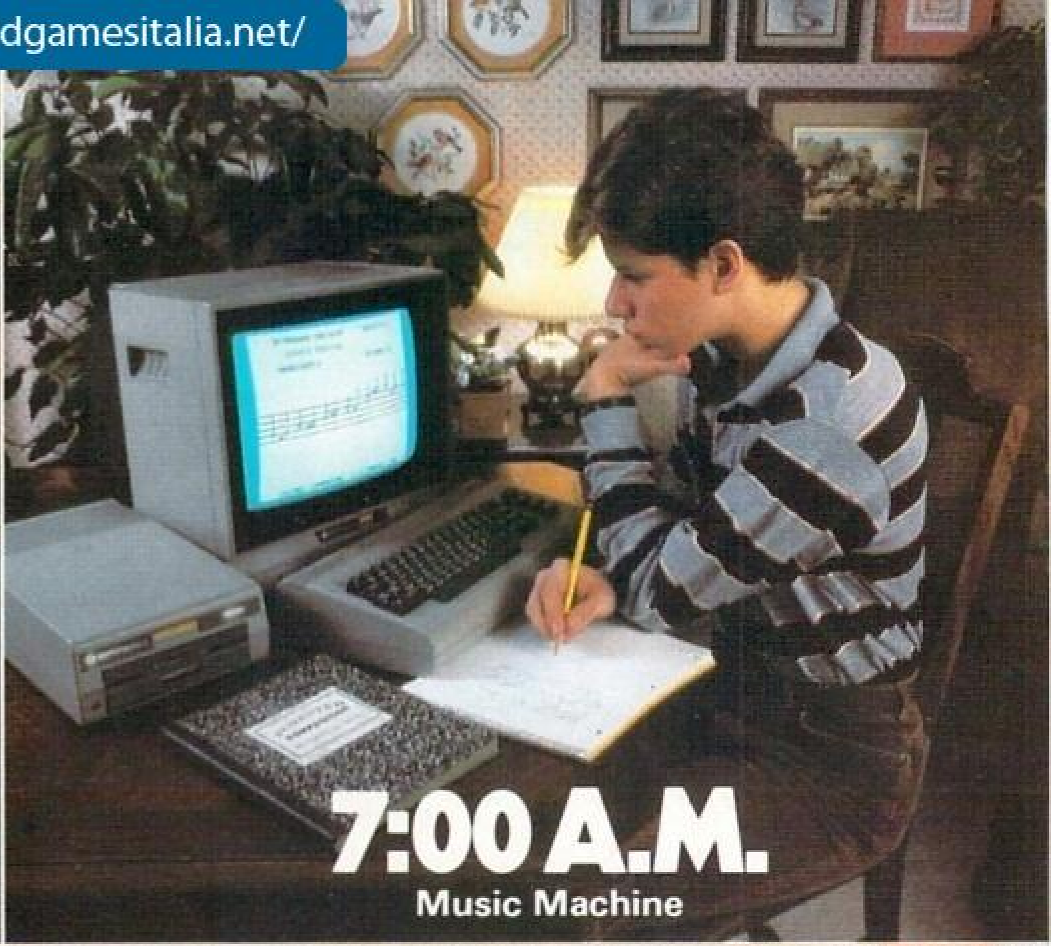

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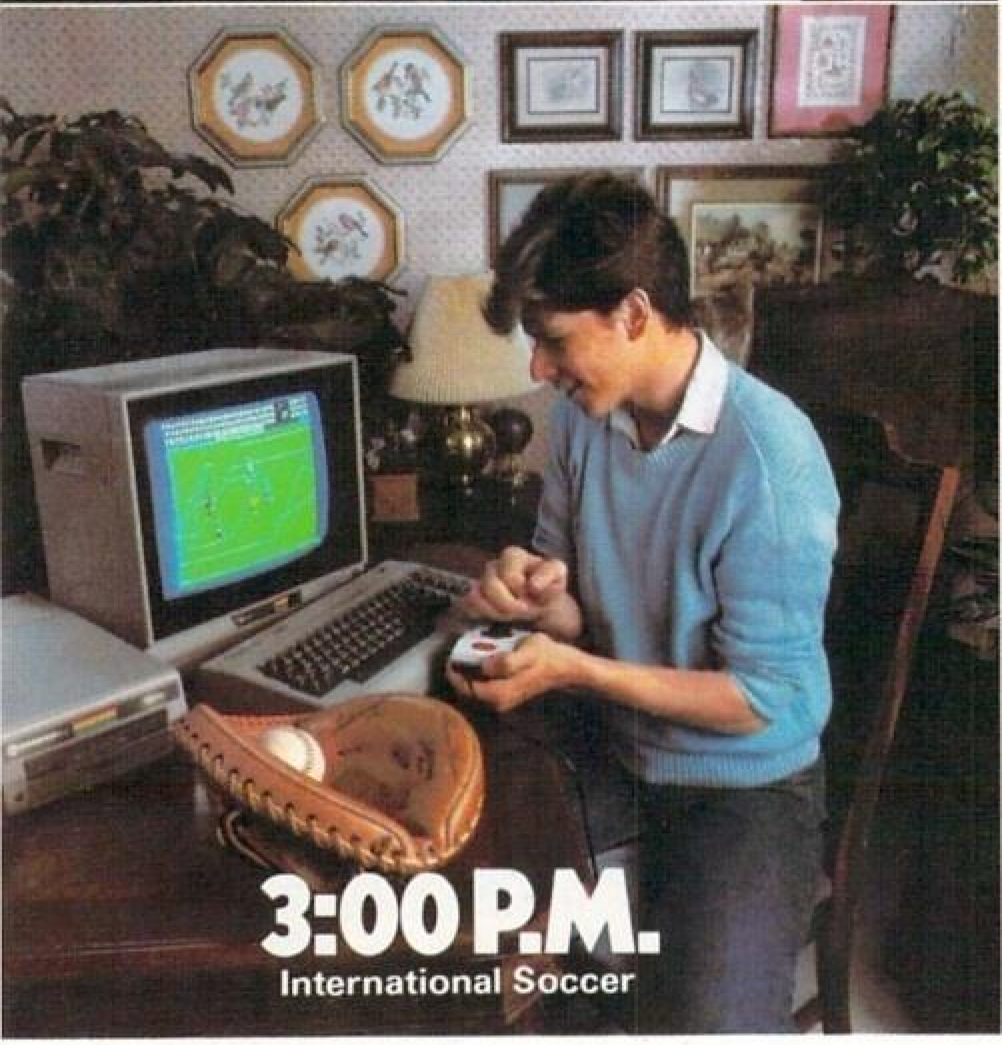
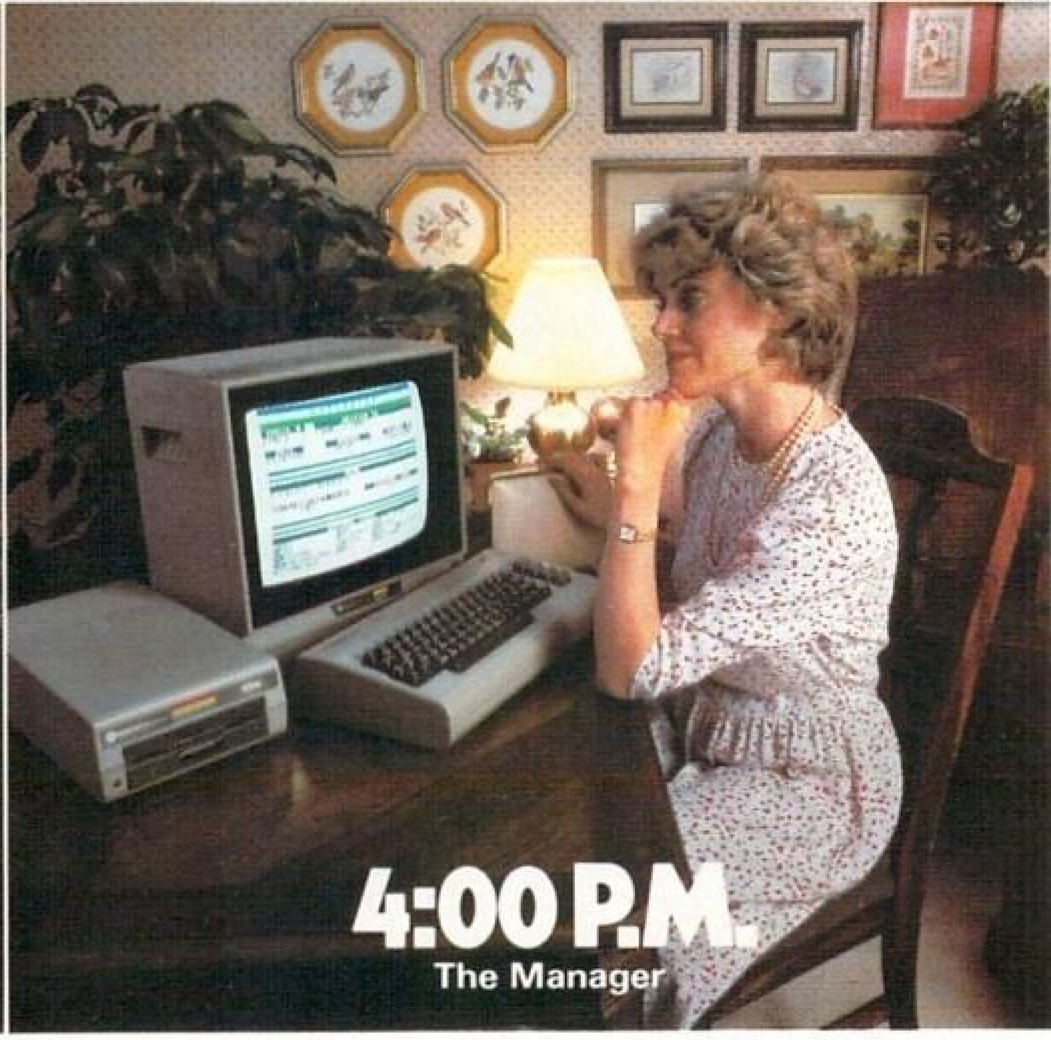


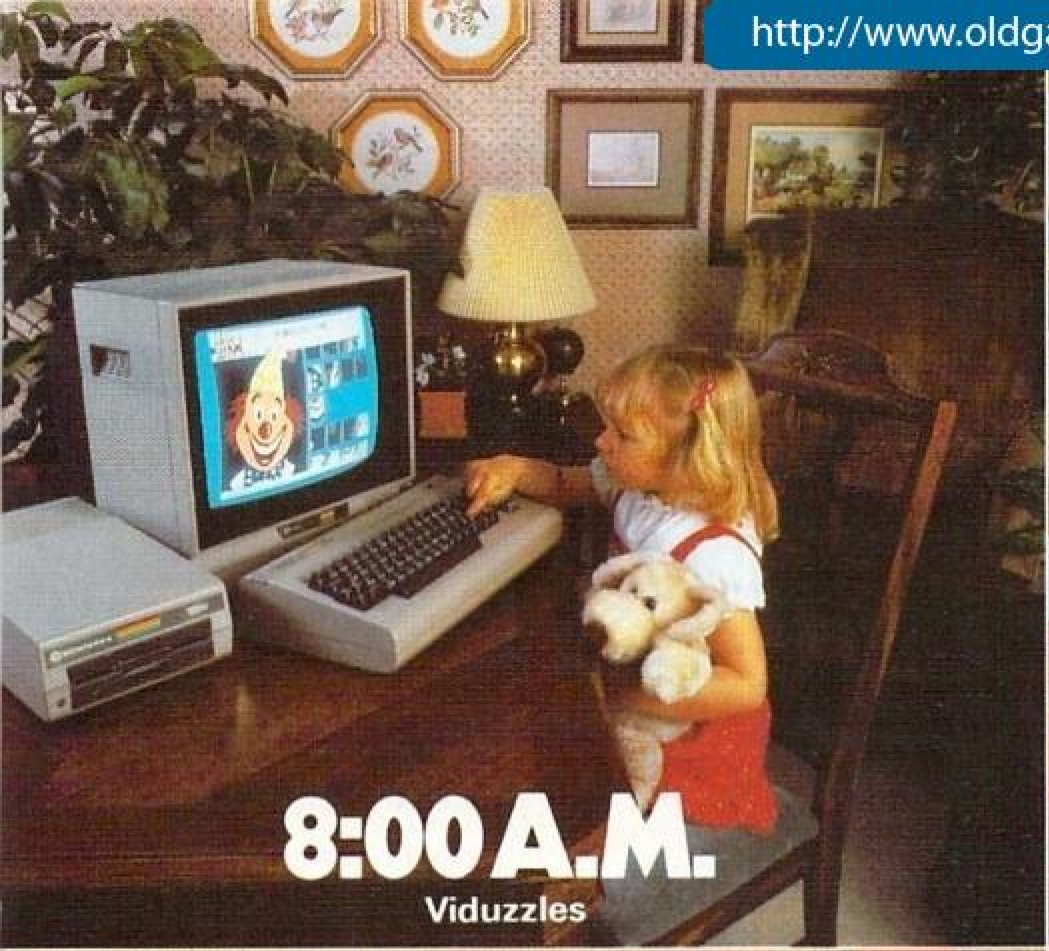
3:00 P.M.
International Soccer



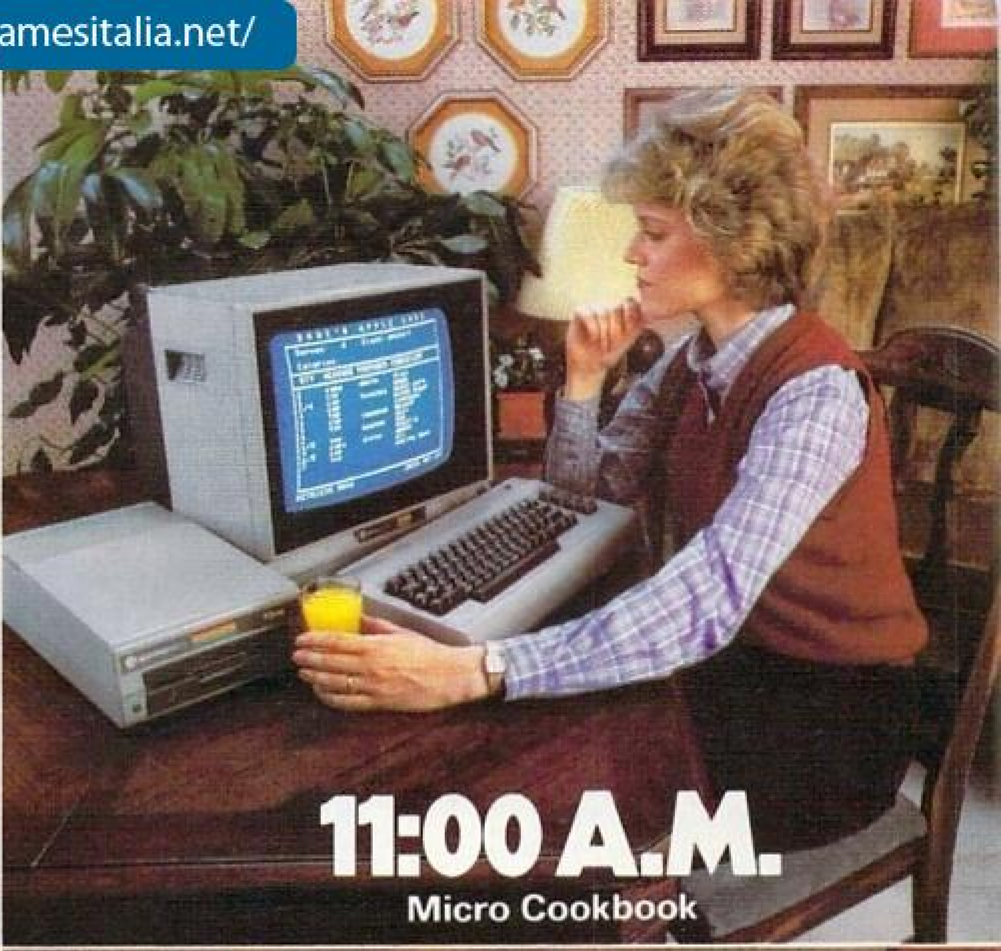
4:00 P.M.
The Manager

WE PROMISE YOU WON'T USE THE COMMODORE 64 MORE THAN 24 HOURS A DAY.

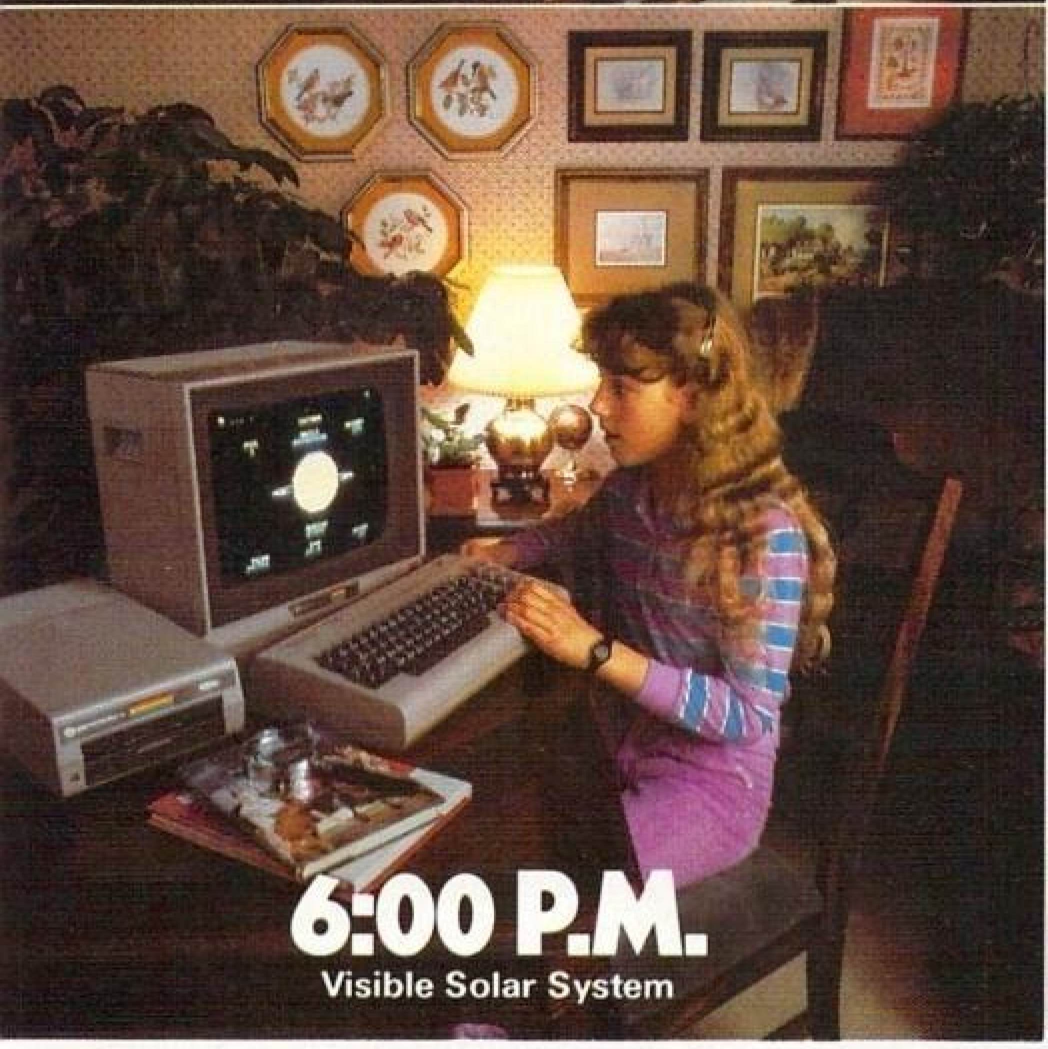
http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/



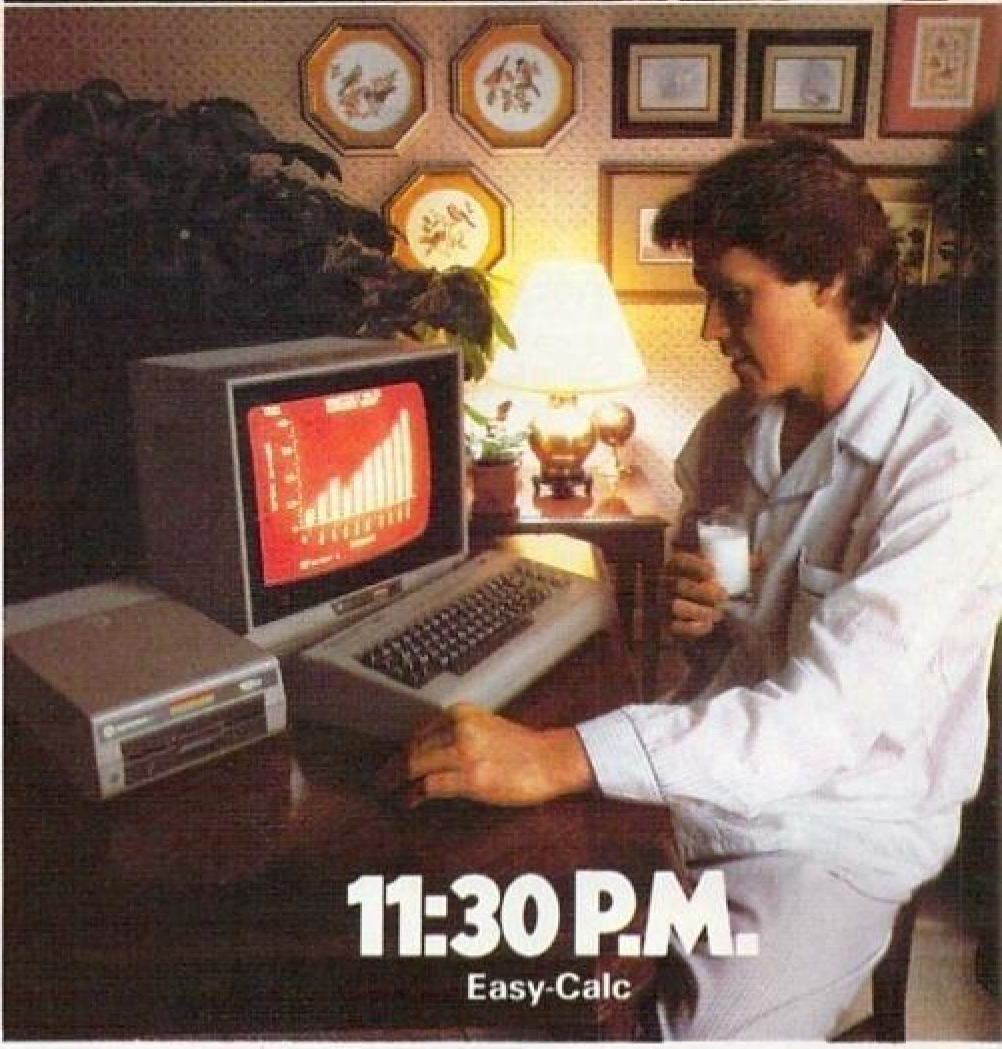
8:00 A.M.
Viduzzles



11:00 A.M.
Micro Cookbook



6:00 P.M.
Visible Solar System



11:30 P.M.
Easy-Calc

It's 6 a.m. Do you know where your husband is?

It's 8 a.m. Do you know where your daughter is?

It's 11 a.m. Do you know where you are?

We do.

We make the Commodore 64,™ the computer that's in more homes , businesses and schools than any other computer.

With its 64K memory, its high fidelity sound and its high resolution sprite graphics, it's one powerful computer. With its price—about one third that of the 64K IBM PCjr™ or the Apple IIe™—it's one affordable computer. (In fact, you can add a disk drive, a printer or a modem and get a powerful computing system for just about the price of those other computers alone.)

And with all the Commodore software programs we make for it, it's one useful computer.

What can you use it for? Just about anything you want to. For fun or profit, for homework or housework, for higher game scores or higher S.A.T. scores, for words or music. For all hours of the day. And night.

So if you're looking for a computer, it pays to look into the Commodore 64.

You'll definitely have enough money for it. Just make sure you have enough time for it.

COMMODORE 64

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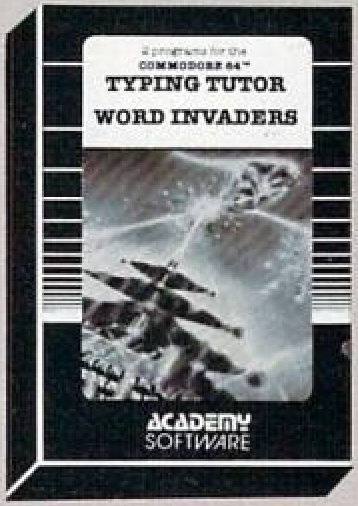
REVIEWERS SAY:

"This is the best typing tutor we have seen yet; ★ ★ ★ ★ +"
INFO-64



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IFR
(FLIGHT SIMULATOR)
ACADEMY SOFTWARE

"Great program!" INFO-64

"It is tremendous fun."
Compute's Gazette

"Flight tested by an air traffic controller, two skilled pilots and an elementary school class. Highly recommended by all."
Midnite Gazette

"This is an unbelievably realistic simulation of the difficulties facing a pilot in instrument flying. I'm a 747 pilot and I think that this simulation could do a lot to improve the reactions and instrument scan habits of even very experienced pilots." 747 pilot

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Programmers: Write to our New Program Manager concerning any exceptional Commodore 64 program you have developed.

News *(Continued From Page 28)*

HesWare also introduced the first software program to authentically simulate the design and production of an orbiting, manned space station.

Based on designs provided by NASA, *Project: Space Station* helps users learn how to construct and launch a space station under real-life constraints and delays such as budgeting problems, unfavorable media coverage and bad weather.

Additionally, the program does not skip the inevitable obstacles of a real mission. Time pressures, last minute split-second decisions concerning every aspect of the program—even traveling to Washington, D.C. to appear before a U.S. Senate committee to argue for funding—are incorporated. As the ultimate in authenticity, players have to travel to Washington to resign as project director to end the program.

To successfully construct a space station, players have to create a budget, schedule a launching date and choose the equipment for the project from a catalog, modifying and adding parts as necessary. Designers then must determine the space station's mission, select a crew, launch space shuttles into orbit and maneuver construction parts with its remote manipulator arm or rocket pods.

Once the construction set is launched into space, players have a unique first person three dimensional view of the space station modules as they are being assembled. The project, however, does not end when the space station is completed. Players must choose from an almost endless variety of missions for the space station, including studies on air pollution, astronomy projects, moon base construction, the development of computer chip factories in space and a summer camp for kids.

Hardware

Okidata announced its entry into the mass merchandising market with Okimate 10, a unique, affordable, full color printer.

Okimate 10 is one of the first printers available in any market to implement thermal transfer printing technology. Unlike conventional thermal printers, which require special paper that is hard to handle and discolors with time, Okimate 10 will work with virtually any paper, from standard writing paper to mailing labels. It also prints on acetate to create instant transparencies for overhead projectors.

The extremely compact printer measures just 13 inches by 7.5 inches by 2.4 inches and weighs a scant 7 pounds. It comes with a diskette and cassette based software package entitled "Learn-to-Print" and "Color Screen Print". These programs provide a tutorial and allow even computing novices to create professional looking printing results quickly.

Okimate 10 utilizes a thumbnail sized print head featuring square dots that completely fill in any character or image. The print head has an expected life of 10 million characters and a speed of 60 characters per second (240 words per minute). Replacement heads for the unit snap in without tools.

The color ribbon works just like a professional printing press, mixing the primary colors to create over 40 different shades. If the user desires, printing without the ribbon can be accomplished by using thermal paper. With Okimate 10, owners enjoy previously unavailable printing capabilities such as full color instant screen dumps of charts and graphics and letter quality text processing. C

The Okimate 10 full-color printer weighs just seven pounds.

Why settle for less when you can have Mo?

VOICE
DATA
LINE
PHONE
Mitey Mo
USI
commodore 64

Introducing Mitey Mo, the ready-to-go modem that turns your Commodore 64® into a telecommunications giant.

Mitey Mo is the complete—and affordable—telecommunications system for your Commodore 64. It will open up a world of practical and exciting uses for your computer, and it will take you online faster and easier than anything else you can buy.

Now you'll be able to send and receive electronic mail, link up with community bulletin boards, play computer games with people in distant places, do electronic banking, and tap into library resources to find the material you need for your reports. All at your convenience.

Until Mitey Mo, Commodore's 1650 Automodem was the obvious choice when you went looking for a modem for the C-64. Like Mitey Mo, it has "auto-answer"— it receives data while unattended. And both modems are "auto dialers" —you dial right on the computer's keyboard. But that's about where their similarity ends.

MODEM FEATURES	USI MITEY MO	COMMODORE AUTOMODEM
Auto Dial	YES	YES
Auto Answer	YES	YES
Auto Redial	YES	NO
Smooth Screen Scrolling	YES	NO
Both Cassette and Diskette Software Included	YES	NO
Menu Driven	YES	NO
24K Software Buffer	YES	NO
Function Key Template	YES	NO
Printing Capability	YES	NO
Easy-to-Use Manual	YES	NO
Bell 103 Compatible	YES	YES
Multiple Baud Rates	YES	YES
Dual Cables Included	YES	NO
Single Switch Operation	YES	NO
Warranty	3 years	90 days

Some mighty interesting features— ours and theirs. Yours to decide.

Suppose you dial a number, and you find that it's busy. Mitey Mo has "auto redial"—it hangs up and redials immediately until it gets through. With the other modem you have to redial each time—and somebody with auto redialing can slip in ahead of you.

Mitey Mo is menu-driven. It lists the things you can do on the screen. Select a number and you're on your way. Since Automodem isn't menu-driven, you'll be hunting through the manual a lot.

Mitey Mo has only one switch, the customized software does the rest. Every family member will find it easy to use. With the other modem you'll have to remember to check three switches, otherwise you may be answering when you mean to be originating.

Mitey Mo gives you access to twelve pages of memory (24,000 bytes), so you can store data and review or print it later. The other modem doesn't let you store or print anything.

Mitey Mo is half the size of the other modem. The very latest technology allows miniaturization and increased reliability, as well. Mitey Mo is so reliable, we gave it a three-year warranty. The other modem gives 90 days, then you're on your own.

Not only will you find Mitey Mo mighty useful, you'll find it mighty reasonably priced. When you consider how much more you get for the money, there's really no other choice.

Mitey Mo
USI

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71 Park Lane
Brisbane, CA 94005
(415) 468-4900

Kids: Writing Up a Storm for Computer Publications!

Kids who know computers and computer programming are being published in droves and not only by magazines (or sections of magazines) targeted at kids, but by book publishers and software companies as well. Feature articles, hardware and software reviews, how-to books and the latest and greatest computer games and programs are as likely to have been authored by kids as by adults.

By Betsy Byrne,
Associate Editor

When I was in school (elementary, junior high and high school), I wanted to be a writer more than anything in the world. My mother was a writer. A great uncle was a writer. My godmother and godfather (unrelated to each other) were both writers. I was told (over and over by my mother) that I was descended from and related to a whole army of famous (and not so famous) people, who made their mark on the world and assured their immortality by writing everything from sermons to advertising copy. I took all of this with a grain of salt (my mother writes ad copy as well as newspaper articles), but I couldn't help but feel that to be a writer must be the most glorious occupation of all. But, I didn't become, as planned, the next Isaac Asimov or Harriet Beecher Stowe. Instead I married, had four kids (whom I lull to sleep with stories about famous and infamous ancestors who were writers), moved to Albuquerque, New Mexico, and planted a garden.

Why couldn't I get published when I was a kid? I saw writing as a dream and to make a dream come true, you have to believe that it is *not* a dream, but instead, a goal to be planned and worked towards. Times, luckily, have changed (as they are bound to, eventually). Not only have *I* realized my dream, but hundreds of kids are busy realizing *their* dreams of writing, too.

Computers As Equalizers

A funny thing began happening a few years ago. For the first time in history, a new technology came into being that has the potential to equalize many traditional differences in capability between not only children and adults, but also people from many different backgrounds; people with and without handicaps and of course, men, women, boys and girls. I have watched computers and computer technology become a leveling force that has put kids and ex-housewives on an equal footing with experienced writing professionals. Computer users who are hungry for good, accurate information and useful, exciting programs, don't care whether the information they crave is written by a thirteen year-old in Buffalo, New York,

ILLUSTRATION—GREG PURDON

or by a thirty-four year-old expert in the technological hotbed of California's Silicon Valley.

For instance, a boy from California, Tim Knight, wrote 15 books about computers and programming before he was 18. Now that he is 18, he and two teenaged friends have formed a publishing company, Probotech, Inc., and are producing an exciting new magazine about robots and robotics. He garnered the money for this new venture totally from his royalties from book sales—no venture capital wanted or needed here, according to Tim!

"I want to be a Captain of Industry" says Tim, "and the robotics industry looks to me like a good place to get in on the ground floor."

Another determined pair of young people (although they have now attained the big 21) are the publishers of *Rom Magazine*, an Atari-specific publication. The two Canadians, Peter Ellison and Bob Cockroft, first dreamed of publishing their own magazine while still attending high school in Websters Corners, British Columbia. They raised money for their magazine doing after-school construction jobs and other projects. They now publish articles and programs written by other young people, helping other kids become writers.

Magazines

With the advent of computer magazines especially for kids, more and more young people are finding that their computing knowledge and English skills can bring in good money, as well as the thrill of seeing their name in print. *Power/Play* was one of the first magazines to ask for articles, reviews and programs specifically from kids for the Kids' Corner section. Soon magazines like *K-Power, Microkids* and *Enter* appeared on the scene and followed suit, finding as we did: good computer writing knows no age boundaries. Kids who first saw their work published in Kids' Corner have gone on to write feature articles in *Power/Play* and other magazines. Brothers Tom and Eric Saberhagen were responsible for the featured review of the Electronic Arts game *Archon* in our June/July issue and are also regular contributors to *K-Power* magazine.

Books and Software

Kids don't always become writers by submitting articles to magazines, of course. Pete Huffman is a 15 year-old who is confined to his house—and to his computer—by severe allergies. He wrote a letter to well-known Fred D'Ignazio. Fred answered and they continued to correspond. Now Pete is working with Fred on a book, writing many of the programs that it will contain.

What about kids who are software authors? Much has been written about whizz kids like Bill Budge, author of the *Pinball Construction Set* from Electronic Arts, or David Simons, the 16 year-old author of *Simons' BASIC* for the Commodore 64 and many, many other people under 18 who have published software hits.

How to Become a Published Author

I get letters from kids every month asking some variation of the question, "How on earth do I get the attention of the large software publishing houses, anyway?" Software houses (and magazines and book publishers) love to hear from potential authors, kids or adults. So many new computer magazines and publishing companies have started up and so many old ones have decided to get into the computer publishing business, that there is a definite shortage of good writing talent right now. If you think that you have a marketable program or a talent for writing—read on!

Magazines are probably the easiest field to break into, since most of them are published every month and must have a certain amount of material to fill each issue. Some magazines produce most of their reviews, programs and articles in-house (which means that they have a full-time staff write them), but most depend on freelancers (that's you!) for a good portion of their material.

The best way to find out just what a particular magazine does want from new writers is to request a copy of their writers' guidelines. If you carefully read a magazine, you will usually find directions on how to send for these guidelines included somewhere, usually just south of the masthead. These guidelines will tell you the kinds of articles or programs that the magazine is currently interested in buying, how long they should be, how much the magazine pays and when the deadlines are for each issue. The most important thing they will contain is the magazine's style sheet, a set of directions that will tell you how to format your submission: double-spaced type, headings on each page and so on. Check "How To Submit Things to Kids' Corner," elsewhere in this issue, for an example of Kids' Corner's writer's guidelines.

Some magazines do not like to accept articles unless you query them about it first. A query is a short (usually one page) letter that is meant to reflect both your writing ability and the tone, topic and information you intend to present in your article. Queries often include the planned first paragraph of an article and tell just how many words you plan to write (a page in this magazine is about 1,000 words). Always include a self-addressed stamped envelope when submitting either an article or a query and be sure that the postage is sufficient if you want your article returned. This is just good manners and some publications will not answer you if you forget.

For more information about sending articles to magazines, writing query letters and a very complete listing of magazines and publishers who accept material from freelancers, you will find the book *Writer's Market*, published each year by Writer's Digest Books, to be worth its weight in gold. You should be able to find a copy at either your library or bookstore.

Software publishing is a very different and much longer procedure than getting an article published. It can take up to a year from the time your program is accepted to see it on the shelves of your local computer store. To break into the programming business, you should have a completed, polished product before you start—and you will still be asked to make a few changes. As a rule, only experienced, proven software authors that a company has dealt with before are given contracts to write a program from the idea stage.

So, say you have a wonderful, super, terrific program—ready to go except for the packaging. What's next? First, you have to decide which company to send your brainchild to—and you should not just send it off into the wild blue yonder to some address you noticed in the back of a computer magazine. You're a whizz kid, right? You should already know what companies are selling the kind of program that you have written. Some companies specialize in publishing certain types of software—games, educational, music, business or productivity programs.

Before you start sending your program to publishers, be sure that you're familiar with the programs that are already on the market and make sure that your program is truly unique. Great minds think alike and someone may have beaten you to the idea by a few months. Now, I don't mean that there isn't room for more than one database or spelling program in the world, but yours should have something that makes it stand out from the crowd. In other words, be sure you don't waste your time sending a company a program they already have. There is room for more than one database program, but not from the same company!

Narrow your first choices down to a few companies and write or call them for their programmer's guidelines and non-disclosure forms. Like the writers guidelines I just described, programmer's guidelines give valuable tips and directions on how to submit your program to the particular company. Non-disclosure forms protect both you and the publisher —they go a long way toward assuring you that no one will be allowed to copy your program and they reassure the company that you actually wrote the program and did not copy it from somewhere else.

Your local Commodore User Group may be a help, since some companies send copies of these forms to all the user groups hoping to find new talent, and may already have the material you need for the company you have decided to approach. There may even be someone in the group who has marketed a program and would be willing to give you some hints. This person might even offer to put in a good word for you with the company that he or she sold their program to—but please don't ask them to do this. You may ask them to let you show them your program, but it should be left at that if they don't offer to do more.

There are also people who act as software agents and agree to try to sell your program for you if they think their connections might be interested. (I have sometimes acted as an agent for some of the people in my user group.) The usual fee for this kind of service is 10% of any money or royalties that you eventually receive for the program. An agent may also help you negotiate a better contract with the company and their knowledge and experience may gain you a better deal than you might negotiate on your own. You will generally be asked to execute a written contract with anyone offering to provide this service; it can save later complications.

If at First You Don't Succeed...

You may not get the first thing that you submit published—the people who do are the exception, not the rule—so make up your mind that you will keep trying.

If you are turned down by several magazines, take a close look at why the editor says your work was not accepted, if a reason is given. You might want to ask an English teacher to critique your article and you might want to spend more time reading the magazines you intend writing for to find out what kind of stuff they do publish. Sometimes your piece is rejected only because they have already accepted something similar (magazines work three to five months ahead of the issue that is currently on the stands; I am writing this in June!) or because they need articles that will conform to a theme. You might try submitting an article to your user group newsletter first (if you haven't already), since it sometimes helps to have had something published elsewhere.

If your program is not accepted by a software company after several tries, you might consider selling it to a magazine! Sometimes programs that are not acceptable for commercial purposes are just the thing that a magazine has been looking for—particularly if you have used some nifty new programming technique. Some magazines sell a disk containing the programs that are in each issue and you get a small royalty on each disk copy sold.

I have not tried to talk about book publishing because it's a bit unusual to write a book before you have had some experience, but that doesn't mean it can't be done! If you have a book waiting in the wings, write a letter to a publishing house or a literary agent describing your book.

Good luck and be sure to write and let me know if you get articles or software published. **C**

The futuristic design of the Ohio Center created an appropriate backdrop for the International Science and Engineering Fair last May.

Commodore Kids Win Science Honors

Participating in the yearly International Science and Engineering Fair is a great honor for talented youngsters from all over the United States and several foreign countries. By the time they get to the ISEF, they have already won several levels of competition, starting with their hometown school district. And this year fourteen of the ISEF participants used Commodore computers as part of their award-winning projects.

By James Miller

It's a perfect setting for the 35th International Science and Engineering Fair—the bold, bright and angular high-tech architecture of the Ohio Center in downtown Columbus, Ohio. A modern marvel of engineering whose multi-dimensional geometry is in natural harmony with the energy and intellect of the 585 science and engineering high school students who spent a week at the fair last May.

They are the "best and the brightest"—exceptionally gifted young people from 45 states and eight foreign countries including Australia, Sweden and the United Kingdom.

Power/Play went to the fair last May in search of students who use Commodore computers and other Commodore hardware in their educational projects, and we found them. The Commodore 64 was well represented and the VIC 20 was there, too—leading players in a fantastic array of scientific applications that push imagination and creativity to its limits.

What you discover in a day of conversations with these young students, age 15 to 18, is that their ability is almost boundless and the tools they have chosen help them reflect that boundless ability. The students know what they are talking about and they are talking about things beyond the imagination of most of us mere mortal adults. Almost without exception, they are self-taught on their 64 or VIC 20, digging into the manual or reference guides on their own, discovering how things work, why they work and, eventually, how to change the computer's quick reflexes to work for them.

Few have used their computer longer than a year or 18 months —but many of them are close to mastering its complexities—conquering BASIC and diving into assembly language or machine code without fear. They have made the VIC and 64 work for them in awesome ways: Computerized Aerodynamic Analysis, The Effect of Hormones on Geotropic Movement in Plants, Robotics, Microprocessor-Based Sound Analysis, Computer-Interfaced Seismography, Simulation of Simple and Compound Pendulums... you get the idea!

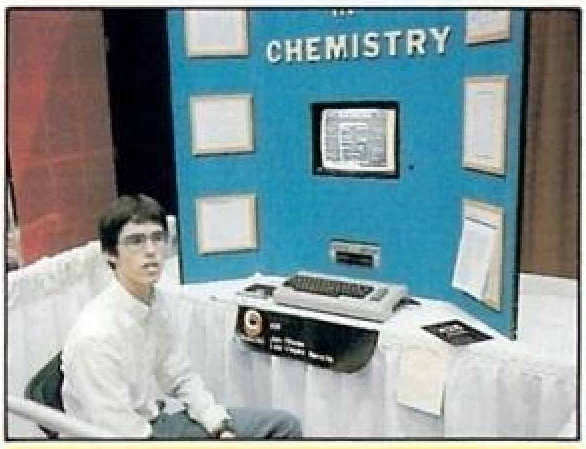
Throughout the week they are grilled by Ph.D. experts in their chosen fields and judged on the basis of creativity, scientific thought, engineering goals, skill and clarity. They also have a chance to talk to each other, exchange ideas and tour science and research facilities in the central Ohio area.

I had the opportunity to talk to several of the students and find out how they use their Commodore computer. Without exception, I was amazed and inspired!

In the following pages you will meet them and perhaps discover some incredible new uses for your 64 or VIC.

A Hacker from the Golden West

He is bright, brash and outspoken. He lives in Las Vegas, Nevada, amid the gambling and the glitter of the city that never sleeps. He is candid about his abilities and takes particular pride in calling himself a "hacker".



Jon Rhees

Seventeen year-old Jon Rhees is also a brilliant programmer and a campaigner for the Commodore 64. He's a true believer in its power and class.

"That's because you can probably go farther with the 64 than most other computers", Jon claims, "and it's easier to get."

"I think it's great for writing educational programs, too," he goes on—like his ISEF '84 project, a chemistry tutorial employing the best of the 64's capabilities: sprite graphics, sound and color and beautifully constructed screen displays.

"I rate the 64 equal to or better than any machine in its memory range," Jon says. "There are few limits to its capabilities."

There seem to be few limits to Jon's capabilities as well. He is an admitted hacker but he makes some distinctions.

"I'm a hacker in the sense that I sit down with a concept and just make a mess of a program" —exploring every possibility until it works just the way he wants it to work.

"Then you clean it up and make it understandable for anyone else who may use the program," he says.

Jon's chemistry program for the 1984 ISEF is written almost completely in BASIC except for the title music, which plays continuously while the data is loading. For that Jon resorted to machine language.

"I didn't even know what machine language was but I started with the programs in the reference guide," he explains.

"I like the sprite graphics a lot and began writing game programs using them." Several of his games have been purchased by at least one computer magazine, he adds, although they are not yet published. "I think they're going into a book instead," he says.

He first began writing in BASIC, then wanted to speed things up and get into high-resolution graphics, too. But he didn't even know enough about machine language to go out and buy a book.

Jon's solution to the problem is characteristic of good hackers. "I just started playing around with the manual, looking at all the operands and experimenting."

Jon didn't even use an ML monitor, although someone recently gave him one. He uses BASIC loaders and data statements to mix his BASIC and ML routines, instead.

Jon works from project to project, planning games "if I think of one" or perhaps an educational tutorial or character-building utility.

"In a game, I begin with the play of the game, where most people will begin with the graphics," he explains of his programming technique. Jon works on one part of the game action at a time before putting it all together. Only then does he add the graphics.

"Making the sound is the hardest part," he admits, "but not because it's hard to make sound. It's just difficult to make sound that's *interesting*." In that, Jon opts for sound effects rather than music.

Lately Jon has had less time for 64 programming, he says, because of the demands of his job —working with a mainframe computer in his Las Vegas hometown.

A Pendulum's Swing

Jeffery B. Hinkle, 17, of Friona, Texas, is an explorer in the high-tech world of computers.

As a junior in high school, Jeff already has discovered ways to use his Commodore 64 and 1541 disk drive that are complex and exciting, practical and fun. His creations range from sophisticated simulations of pendulum motions involving high math and graphics to football programs that analyze opponents' offenses and determine the probability of successful defense!

SIMPLE & COMPOUND
PENDULUMS

Jeffery Hinkle

His project at ISEF '84 explored the computer simulation of simple and compound pendulum motions. It began as a science experiment earlier in the year.

Jeff explains, "I thought about how to do the mathematics and started to work it out on paper. It took over an hour and six pages of paper just to work out four points of pendulum movement!"

The BASIC program Jeff created for the project and plugged into the 64's memory, however, can plot and graphically display 200 points in a little over four minutes!

Speed, of course, is one of the best reasons for using a 64 in high-level mathematical applications, but with a pendulum simulation, there was another important consideration.

"Speed was the big reason for using the computer," Jeff says, "but the 64 also helped me eliminate several physical restraints. The size of the actual pendulum is one and overcoming friction is another. With the 64 we can eliminate friction and size restraints to some extent, until the numbers get too large."

He's used the computer for about 18 months and was not exposed to computers before that "except in books and magazines." Self-taught with the aid of the manual, Jeff just jumped in and made the 64 do what he wanted done!

"With the kinds of programs I'm writing now, however, I think I'm getting close to the memory limits of the 64 in BASIC programming," Jeff notes. "BASIC requires quite a bit of manipulation in terms of memory and I'm having to chain several programs together just to get my ideas to work."

There is a lot that Jeff is just beginning to understand about the 64, he says. "The pendulum simulation is not in real time," he explains, "but it easily could be." For that, Jeff says he needs an understanding of machine language and has yet to tap that vast resource within the 64.

"I suspect it would have been very close to real time if I had been able to use machine language, instead of BASIC," he adds.

Jeff is not limiting his computer skills to the theoretical, however. Earlier this year, he worked through a commercial football program, making major modifications to it that allowed the school's coaches to break down plays that opponents run against the team.

"It will scout about 200 plays that an opponent may run against us and tell us what holes in the line they are most likely to come through," he comments. The "football scout" also will predict the probability of pass plays or running plays—what's likely to happen anywhere on the field under game conditions!

But does it work?! "The program has been very helpful to the football team," Jeff says with a smile. "They have enjoyed using it to predict some of their defenses."

Although he humbly admits that it doesn't work every time, Jeff adds "... in general, it's very successful, I believe."

Like many Commodore users, Jeff is at the cutting edge of a new technology that he intends to explore to its limits. He is looking at producing a comprehensive general ledger program with an eye towards the commercial software market. In the meantime, helping his Friona High School team win a few games is satisfying enough!

Feel the Earth Move

When the earth moves, Eugene Sargent, 17, of Fayetteville, Arkansas knows all about it. His Commodore 64, interfaced with a small scale seismograph, tells him what's happening, how much is happening and just about where it's going on!

His program, making use of machine language and high-resolution graphics to simulate a seismic strip-chart recorder, monitors movement in a seismograph and updates readings every sixtieth of a second, thanks to the 64's accurate builtin jiffy clock.

Eugene Sargent

"It's an advantage to use the 64 because it's more accurate than most strip-chart recorders now in use," Eugene says. "You can calculate to the exact second when each reading was taken."

Mixing the seismograph and the Commodore makes a nice marriage of two technologies. Eugene built the seismograph first and learned about machine language before interfacing the two.

"I just got the seismograph interfaced last month," he explains, "using an eight-bit analog/digital converter I designed. With just eight bits (normal for the 64) you only have 255 possibilities and I think that 12 bits would be better."

Eugene says that the 64 can be made to process 12 bits easily, however.

While exhibiting his interfaced seismograph at the 1984 International Science and Engineering Fair in Columbus, Eugene attracted the attention of at least one professional seismologist from Alabama who was interested in learning more about Sargent's program in hopes that it would make his job easier.

"It hasn't yet been field tested," Eugene noted, but he added that, "in the right environment it produces very characteristic wave forms."

Eugene began his interest in computers with a VIC 20 and moved up to the 64 when memory restraints and high-resolution demands made it necessary.

"I'm pretty new at machine language and I've had a monitor only since January," Eugene says, but adds that he strongly suspects that the 64 would do just what he needed it to do for the project.

"The graphics are so nice and it has great potential as a recording and reporting instrument," he explains.

His first experiments were with BASIC, "but it was too slow and it takes forever to calculate complex equations in BASIC." Assembly language was the answer, the high school junior says.

His ISEF project program uses up only about 2K of memory, he notes, but "it does a lot because machine language is so compact."

Eugene's efforts earned him a special award at the fair from the Acoustical Society of America—a first prize of $100! The American Patent Law Association also recognized his project with a $25 honorable mention prize. The project earned recognition from the U.S. Air Force, as well, which included a one week tour of its research and development facilities.

"I'm just beginning to expand the capabilities of the program," Eugene says. "I want to work on making it so it is better than the conventional systems, giving it a logical means of processing data, frequency counting and calibration."

Surviving Physics Can be Fun

Michael Todd Jackson admits that he's "pretty good" at senior physics at Batesville High in Batesville, Arkansas. What he also readily admits is that his family had a Commodore 64 personal computer for over a year "before I even looked at it!"

"My dad was giving me a real hard time about learning how to use it," Mike laughs.

Exactly what Mike did about learning the 64 is astounding, however: "I decided to do a physics project with the 64 and I hoped that it would be a good way to learn about the computer," he says.

The "Physics Survival Game"—his ISEF entry this year—is the first program he ever wrote on the 64 or any computer! It runs to more than 130 blocks of disk memory on the 1541 drive and the listing (all in BASIC) is longer than the classified ads in many major city daily newspapers!

THE PHYSICS SURVIVAL GAME
CAN YOU SURVIVE?

Michael Todd Jackson

Mike's game is really a physics tutor, a teacher and a space game dealing with all major concepts encountered in the first semester of high school physics.

"It's a game in that you and your physics teacher have crashed on a distant planet and in order to get off, you have to use your physics knowledge to fix the craft and escape," he explains.

Mike says writing the program was a little like working on the script of a Hollywood movie. "I sat down, and like in the movies, I did a play-by-play script of everything I wanted to happen," he says.

"There were major changes throughout the project," he adds. "I had about 75 blocks already on the disk before I really knew where I was going with the program! I wanted to add sprite graphics, but after the program was written, there was not enough memory left for them."

His program, while "in a very raw version now," can be modified to do mathematics or even teach English, a foreign language or history.

"I like the 64 because it is very easy for beginning students to learn," Mike says. "The keyboard controls are convenient and easy to understand."

With the ease of the 64, Mike was able to work out a program that is understandable even to those who have never turned on a computer.

"It tells them step-by-step just what to do and when to do it. If you push a wrong key, you are not going to kill the program," he comments.

He began the project in mid-January of this year and wound it up in mid-March. Even with the experience of creating a very long and complex BASIC program on the 64, Mike sees few limitations to using the 64 for complex applications. In fact, he wants to develop his understanding of the computer's graphics capabilities and explore the SID sound chip, too.

"I like to play war game simulations on the 64 and would like to try my own next," he goes on.

Imagine where Mike would be now if he hadn't let the 64 lie around for a year!

Jaws: With a Computer Twist

When he was only ten years old, Andrew Jones of Edgewood, New Mexico, built a robot arm out of children's snap-together blocks. He's 15 now, a freshman in high school, and the arm he built has been given electronic life and movement with the aid of his Commodore 64.

Andrew is not one to let complexity slow him down. He poured through the computer's manual and "discovered it had more capabilities than I thought. I'm just using it to control the robotic arm," he says.

The control comes through a Complex Interface Adaptor, (CIA) that interacts with the 64 through the user I/O port.

"The 64 sends out eight-bit parallel data to the interface, which decodes the eight bits into 12 bits—one bit each to turn on or off six motors." Andrew explains.

The 64, CIA and the robotic arm operate in a give-and-take fashion.

"The arm gives feedback data that ends up in the paddle port on the 64 so that the computer has a pretty good idea where the robot is!" Andrew adds.

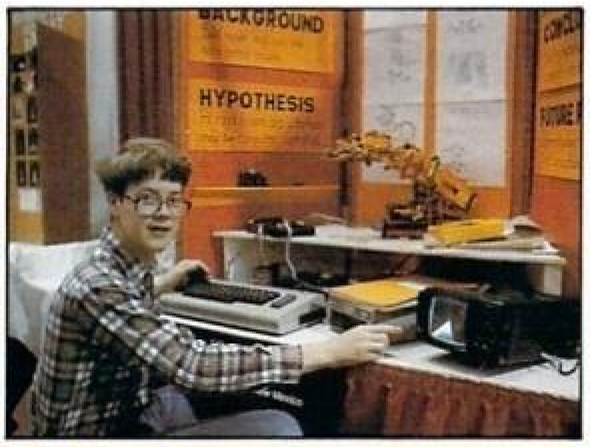
Andrew worked out the schematics for the CIA after finding out how the user I/O port worked through trial and error.

"By matching information with the user port specs shown in the guide, I worked out a circuit that would interface with the robot," he says.

Learning computers and BASIC in his school computer classes, Andrew now is developing his own software—games, assemblers and machine language programs.

His efforts with the robot arm earned Andrew a first prize of $100 from the IEEE Computer Society.

He confessed that he thinks Commodore ought to provide more information to users about the capabilities of the I/O port and how to interface it with external devices.



Andrew Jones

"That would make a good article," he smiles. And maybe Andrew Jones is just the one to write it?

The 64 in Flight

One day soon, Jabe A. Sandberg may just teach Lockheed a better way to fly!

The 18 year-old Cedar City, Utah, senior is working on a computerized method of aerodynamic measurement and analysis which he claims is a "new method of testing forces in a wind tunnel."

Jabe (just like Abe) says his application is an "improvement over some of the methods currently in use," because it allows electronic measurement and subsequent computer analysis of stored data.

Jabe used the Commodore user I/O port and an analog/digital converter board of his own design. The board interfaces with a bank of four pressure sensors inside the wind tunnel that, together, sense lift, drag, pitch and yaw in all possible directions.

Using the 64's builtin capabilities and the *Super Expander* high-resolution graphics cartridge, Jabe has enhanced the graphic display, as well.

"The 64 can do a lot of things that are just not possible on any other computer... image rotation, sprites and so forth. That's what made me choose the Commodore 64," Jabe says.

His aerodynamic analysis program takes information from the sensors and reads data into sequential and text files. Data is displayed visually through an x/y axis graphic that shows where the airplane is as the tests are being run. The program can be used in graphing lift versus time, as well.

Jabe was well rewarded for his time and abilities. He won a second place award at the fair from the American Astronautical Society. He also was recognized by the Naval Air Systems Command with an alternate award and a second place engineering prize from General Motors.

A Pursuit of Excellence

The final day of the International Science and Engineering Fair in Columbus was hectic and rewarding for the students—most of whom had spent months in preparation and study, research and refinement of unique and inventive projects.

Many were rewarded with recognition from their peers in the scientific and business community—most were not. None of those *Power/Play* talked with were losers, however—not in any sense.

The fourteen students who used the Commodore 64, VIC 20, color monitors and disk drives understood the complexity of their undertaking and developed a mastery of their equipment and its capabilities.

Saturday, May 12, was a day of awards, field trips and tours. The students were scattered and organizers of the event did not require that they be near their project booths. As a result, I was able to speak only with some of those using Commodore computers. I wish there had been time to get to them all.

What they are doing with the Commodore equipment is exciting—at the very top level of technology. Throughout the week some 900 expert judges reviewed their work, but many of the students also had the opportunity to meet industry leaders who certainly were impressed with their ability and commitment.

If the present is any measure of their drive and ambition, these bright young men and women are sure to make an impact on whatever they choose to do in the future.

In addition to those I interviewed, other Commodore users at the fair were:

Paul Nelson, Andrews, Texas, "Effects of Specific Hormones on Geotropic Movement."

Gary Calfee, Wichita Falls, Texas, "Computer Controlled Parabolic Solar Collector."

Michael S. Warren, Rapid City, South Dakota, "Microprocessor-Based Sound Analysis."

David Rapp, Wheeling, West Virginia, "Electromagnetic Analysis of an Object."

Jeff Mauldin, Albuquerque, New Mexico, "Programming a Computer to Make Decisions."

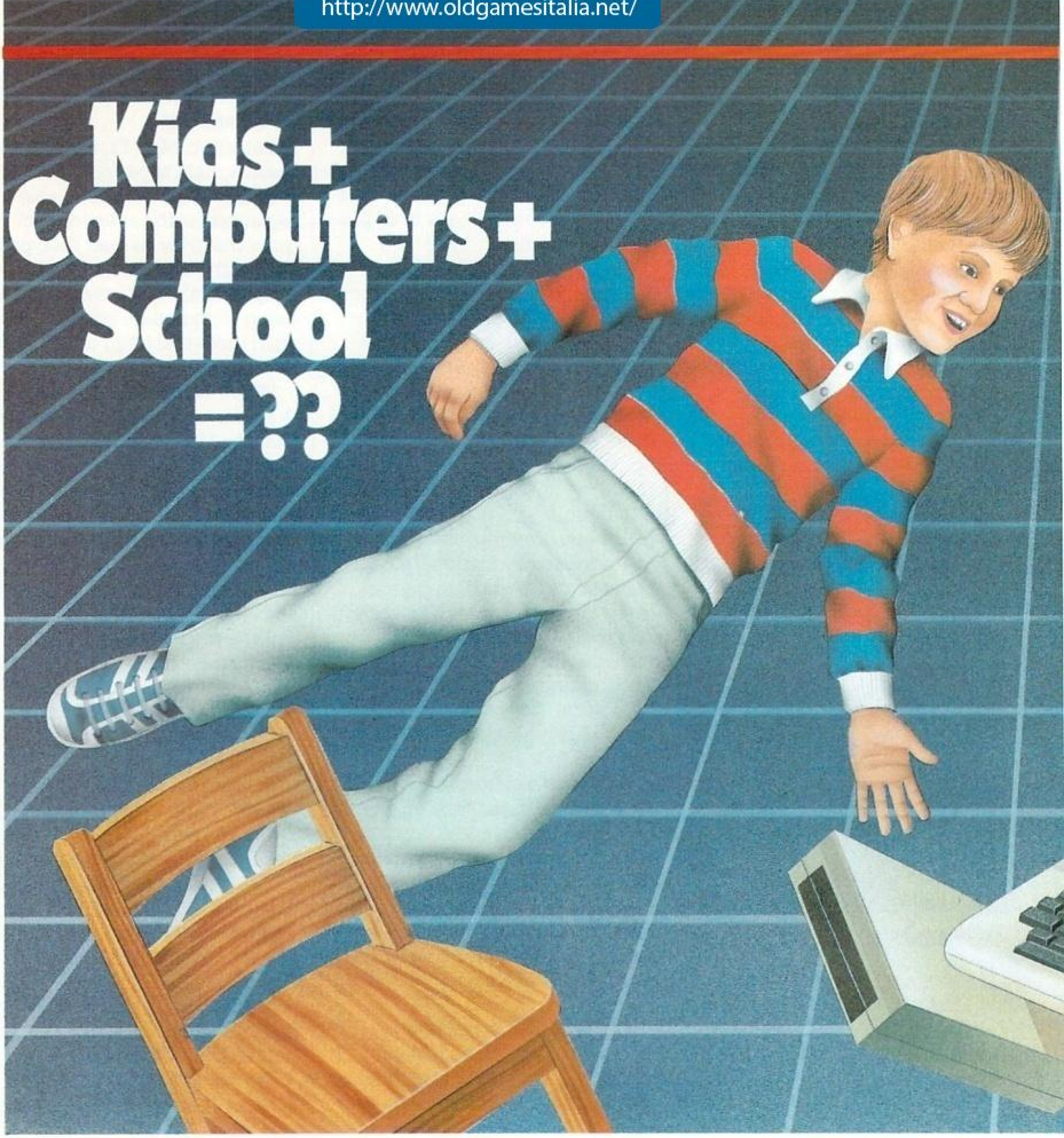
Dan Badders, Omaha, Nebraska, "Computerized Polynomial Algorithms."

Darryl W. Hughey, Jacksonville, Arkansas, "Learning Chemistry by a Program."

William E. Wilcox, Parkersburg, West Virginia, "Phonetic Analysis."

Zayda Perez-Quinones, Rio Piedras, Puerto Rico, "Studies in Human Behavior." **C**

Kids + Computers + School = ??

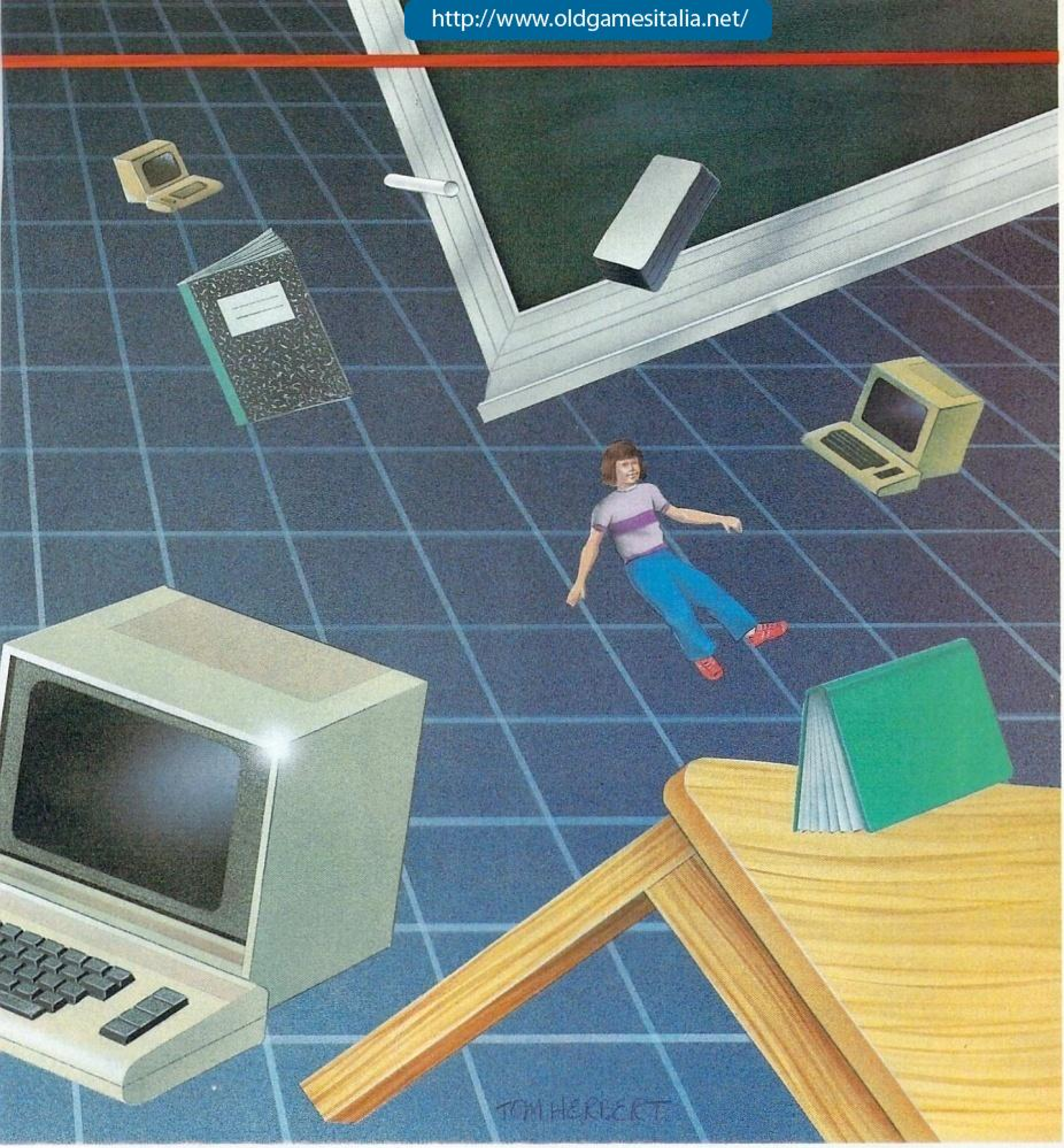


By Jim Gracely
Technical Editor

What are kids in public schools doing with relatively small school district in Miller Place on Long

I visited the Miller Place school district to get a story on kids using computers in the classroom. I was all prepared to talk to the kids about computers. I wondered what second grade students were using computers for. Are they using them to learn vocabulary words? Are they learning multiplication tables from the computer rather than from a teacher? What about the seventh-, eighth- and ninth-grade students? Were they using computers to learn geography, history or science?

I was ready with my questions. I wanted to find out what the kids felt they were learning from the computers. Did they like learning from a computer better than



computers in the classrooms? I visited a Island, New York, to find an answer to that question.

learning from a teacher? I wanted to find out how the teachers chose software for Computer Aided Instruction (CAI) and how they felt about the computer taking over part of their job.

All the questions that I had prepared were based on the concept of computer-teach-child. Visions of computers lording over students danced in my head, along with lazy teachers sitting behind desks with their feet kicked up, letting the computers do all the work.

What I actually saw at Miller Place was quite the contrary. What I found was that a child-teach-computer, rather than a computer-teach-child approach was used. In fact, the use of computers at Miller Place was so unique that I was forced to change the angle of this article. As a result of my visit, I discovered three things:

1. The computer works in the classroom as a tool for the students to use in addition to the classical CAI.
2. The introduction of computers to kids is the same for any age group. The only difference is preconceived notions the students may have at the time of introduction.
3. The constructive use of computers in a school district is a dynamic, complex program requiring continuous care and guidance.

In the rest of this article I will discuss these three ideas as they applied within the Miller Place school district.

The Computer As a Tool

The first of my preconceived notions to be blown to bits was that the computers can only be used in the classroom for CAI (Computer Aided Instruction). I'm not going to discuss the merits or shortcomings of CAI, but in the schools of Miller Place it is not the most important aspect of the computers. The real emphasis at Miller Place, from kindergarten through senior high, is on the computer as a tool for the students to use to their benefits. Teaching children to use the computer as a tool begins when they are being introduced to the computer and continues into computer literacy, word processing and programming.

Jerry Salmon teaches second grade students at the Andrew Muller Elementary School in the district. About three years ago, he began bringing his own PET into the classroom to familiarize the kids with a computer. In fact, it was Mr. Salmon who first introduced computers into the school district. Now his classroom always contains a number of VIC 20's, Commodore 64's and PET's. On the day that I visited, there were three VIC 20's and two 64's being used by the students.

What were the kids doing with the computers? Learning states and capitols or the number line? No, they were writing stories on word processors: *Bank Street Writer* and *WordPro 3 Plus* on the 64 and *Wizard Writer* on the VIC 20, to be exact. They had been introduced to a VIC 20 in first grade and now, by the end of second grade, they could enter text, edit the text and print out the stories they had created. Their understanding of the computer was quite good; they knew more than how to just use software.

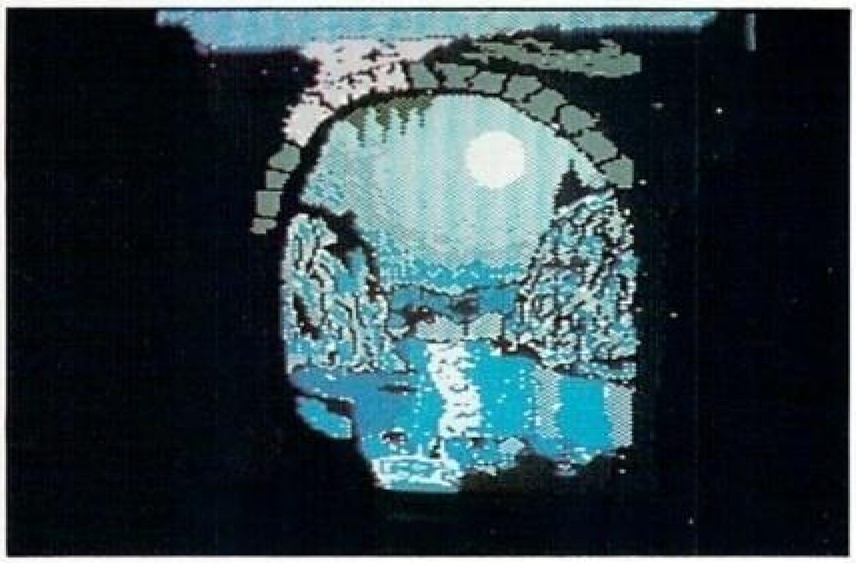
While I was in the class, one of the kids wanted to print out a story he had finished. He went through the keystrokes needed to get the text printed, but the printer didn't respond. He turned around and said something was wrong. With a few minor suggestions, he was able to discern that the printer was not turned on and that it was connected to the wrong computer. He then proceeded to turn on the printer, rearrange the cable to the computer he was using and print out this story. Not a major accomplishment by some standards, but it displayed an understanding of the computer system that went beyond using the software.

This is what Mr. Salmon is trying to accomplish. The kids aren't learning "subject matter" from the computer, but they certainly are learning! He also uses some CAI for arithmetic and even employs the Software Automated Mouth (better known as S.A.M.) to teach phonetics and pronunciation. Of course, Mr. Salmon himself is a dedicated computer user, which enables him to work with the kids and computers in ways most second grade teachers could not. He also writes some of his own programs for the students and maintains complete course schedules for himself in *WordPro* files on a PET.

I talked to another second grade teacher at Andrew Muller Elementary School. Her name is Michelle Greenfield and she used a slightly different approach to the computers. In the front of her classroom were two PET's. Each week, one student was assigned to turn on the computers and to

MR. IASCARO'S ART ROOM
Getting Started
COMPUTER ART
Datalife

Rich Iascaro's art classroom at North Country Road School, where students used the 64 to create the graphics on this and the following pages.



load the software for the day. The rest of the students then used the computers for CAI, keeping track of their own scores on the unit quizzes. Part of Ms. Greenfield's class is in the Gifted and Talented Education (G.A.T.E.) program. These students are also learning to use the VIC 20. They are introduced to the computer at the beginning of the year and follow through a simple BASIC programming course. By the end of the year they are able to write short BASIC programs, save their programs to tape and load the programs into the computer.

I learned something else from Ms. Greenfield. I asked a question that I thought would produce scores of humorous stories: "Do the kids get really mad and frustrated with the computer? Have any of them ever pounded on the keyboard or screamed or thrown a computer against the wall?". Her response was a simple no. They don't get frustrated or mad at the computer. I was almost speechless. I can't get halfway through a tough program without hitting the keyboard a couple of times. Ms. Greenfield said that the kids just don't respond that way. There is no person-versus-computer rivalry. The kids understand that the computer can do only what they instruct it to do. Anything that doesn't work is a result of some mistake that they have made. If you get a ?SYNTAX ERROR it means that you goofed. That simple. No arguing or hitting.

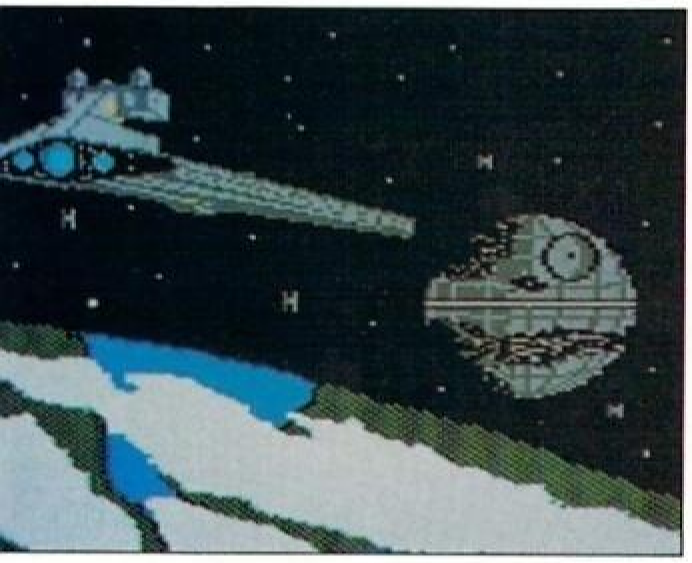
It is this kind of response to computers that has lead Marie Jarvis at Andrew Muller to use a Commodore 64 with children who have learning disabilities. Marie Jarvis coordinates the learning disabilities program and has found that the children perceive the computer as a non-entity. It is something that they control. It won't scold them if they do something wrong, which allows them to overcome their inhibitions. There is also a visual, tactile relationship between letters on the screen and the keys which must be pressed. Even if a child can't coordinate the motor skills necessary to write a word, he/she may be able to find and press the correct letters on a keyboard. This is a good intermediate step for these children.

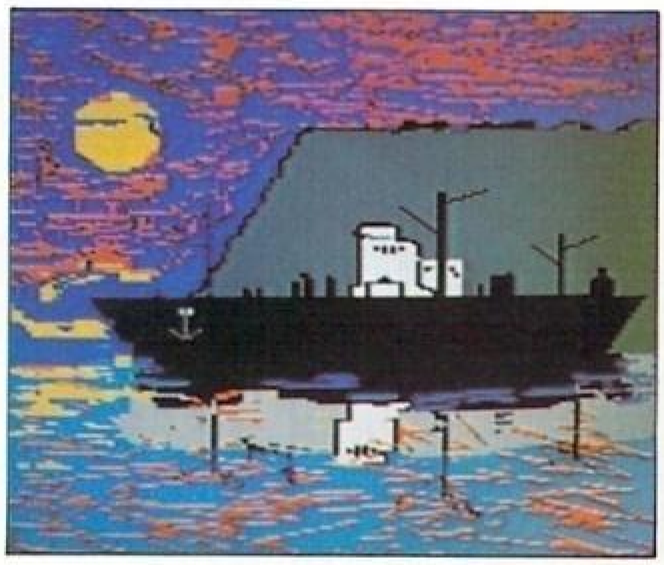
Moving up five years in the lives of the students, we come to the North Country Road School for seventh and eighth graders. Steve Scopa is a math teacher here and the coordinator for computer use in this school. He has initiated a 20-day computer literacy unit into the seventh- and eighth-grade math programs.

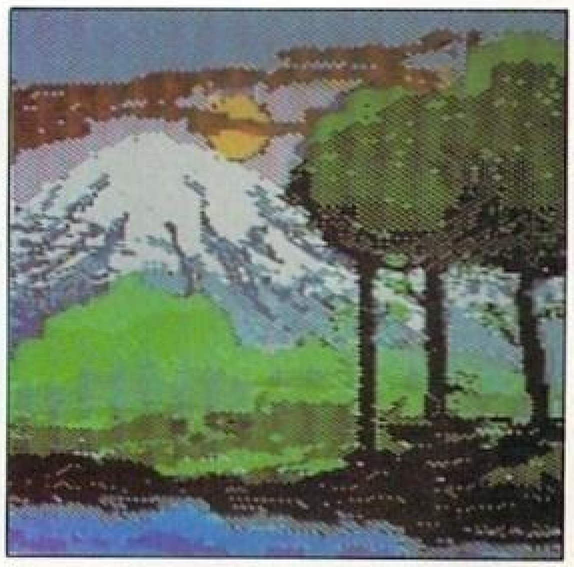
The class that I visited was just starting the second day of the unit. About ten 64's were scattered around the room with two kids sharing each computer. Their assignment was to learn to move the cursor around the screen. Was this too introductory for seventh graders? Well, some kids were just managing to move the cursor around. Some were making multicolor hearts on the screen next to little love messages and some kids were already 20 lines deep into a program that they were writing.

Pat Hughes is the shop teacher at this school and he has written a program to allow the students to use the PET as a drafting tool. After a number of prompts from the student, the program will print out a drawing form with all the necessary data printed at the bottom. Anyone who has ever done this by hand will appreciate the time saved by using a program like this. Again, the computer is used as a tool. Mr. Hughes feels that the computer is part of the world and that the students should learn to look at it as a tool for their use.

On the artistic front, Rich Iascaro uses two 64's in his seventh- and eighth-grade art classes. What else would they be doing but working on KoalaPads™? These graphic tablets are storming the beginning artist's market, so why not teach young artists how to use them? Once again the computer is introduced as a tool, in this case for drawing. Mr. Iascaro has each student bring a picture into class and, taking turns, they are each allowed one week to try and reproduce the picture. The results are some very good screens. There are a number







of these screens printed throughout this article along with a picture of the art room itself.

Miller Place High School houses the ninth through twelfth graders and here again, the computer is presented as a tool for the students to use. Mrs. Obsarski is the chairperson of the business department and also a teacher. In her classes, she uses PET's and *WordPro* to introduce the students to word processing. In addition to class time, the students are allowed to use the computers during certain other times each day. Mrs. Obsarski says that a number of students have started taking advantage of this extra time on the computer to write term papers and reports.

As you can see, the Miller Place school district applies computers from kindergarten through the high school, emphasizing the computer as a tool. This approach to using the computers is working quite well. In fact, just about every teacher that I talked to was planning new programs and projects for the students in the upcoming year.

Introduction to the Computer

To many people, the ability to program a computer is the best utilization of the computer as a tool. Whether this is true or not, an introduction to computer programming seems to be a widely used starting point for beginners. The Miller Place school district is no exception. I have already mentioned the programming that is introduced in second-, seventh- and eighth-grades, but there are two additional grades where computers play a major role.

At Miller Place High School, all ninth-grade students are required by New York law to pass a computer literacy course. The requirement for passing the course is an understanding of about 30 computer terms such as CRT and byte. Nancy Greenfield teaches this class and adds some introductory programming to the course. By the end of the semester, the students know the 30 computer terms as well as how to load, save and write simple BASIC programs.

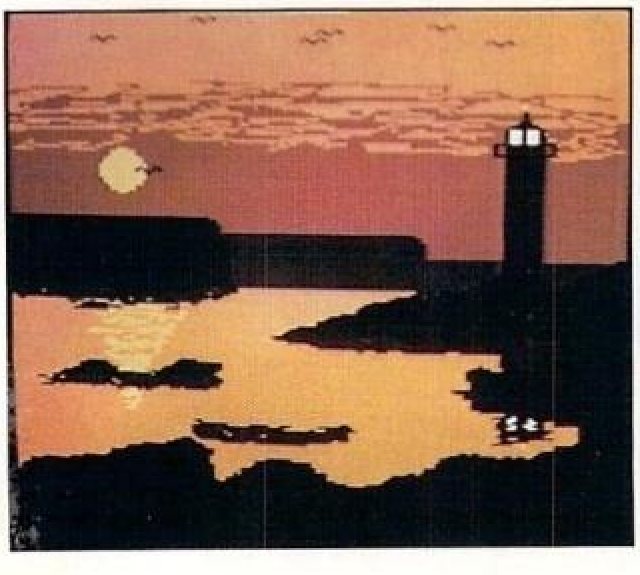
The only school in the district that I haven't mentioned yet is the Sound Beach School for fourth, fifth and sixth graders. There are no special computer courses here. However, there is a computer room equipped with about a half dozen 64's and PET's. Grace Brindley is the coordinator here for the G.A.T.E. program and is also in charge of the sixth-grade computer program.

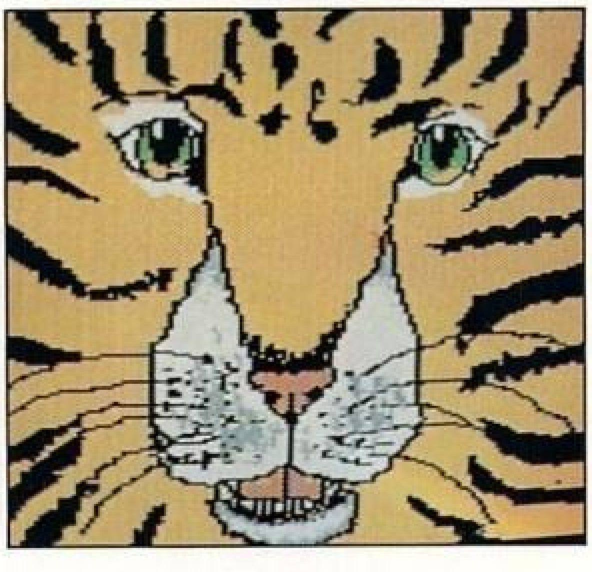
The computer program allows kids to come into the school before classes begin and work on the computers. What kind of response does she get? Well, this year about 170 kids signed up to come to school early. This was far too many children to have in the computer room at once, so Mrs. Brindley has devised methods of dividing the kids into groups to share the room. What the kids do with the computers is up to them. Some play games and some write programs in BASIC. The only thing Ms. Brindley will not let them do is copy programs out of magazines.

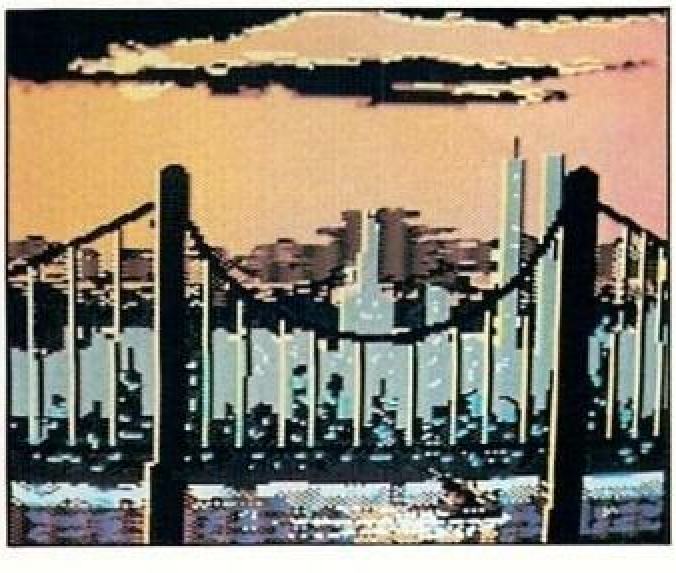
I mentioned these two additional examples to illustrate a point. The students in grades two, six, seven, eight and nine are all being introduced to the computer on the same level. This isn't to say that the second graders are as advanced as the ninth graders, but they seem to approach the computer from a different angle.

One of the questions I asked all the teachers was if any of the kids balked at learning about computers. This was another of those questions that I thought might be interesting. Until I got to the ninth-grade class all of the responses were an emphatic no. The teachers in the lower grades all said that the kids were excited about using and learning about the computer. One teacher even mentioned that he used the removal of computer privileges as a punishment.

But ninth grade was different. Teacher Michelle Greenfield said that each semester there are a couple of kids who either don't want to even look at the computer or just don't care about whether they learn it or not. There are two







possible reasons for this, she surmises. First, it is the first time that the kids receive a pass/fail grade for their work with the computer and that in itself can produce all kinds of effects. The second, and perhaps more likely reason, is simply because of their age.

In today's society, the computer is still facing barriers. Just as any new technology, the computer has opposition from many people who don't see why they're necessary, or worse, feel threatened by them. The kids who are young enough to lack opinions think that the computer is a wonderful new toy for the classroom. They have a sense of it being an exciting challenge to make it do what you want and to use it to do those things you don't want to do. Again, we see the idea of using the computer as a tool. The students in ninth grade however, can think back to elementary school days without computers. They have made it through three schools without computers and apparently have already formed some negative preconceptions about them.

A Complete Computer Program

A look into the future sees this situation changing. Seven years from now, the kids in Mr. Salmon's class are going to be in ninth grade. They will have been introduced to the computer, with additional hands-on time in grades three, four, five and six. They'll go through the computer literacy units in seventh and eighth grades and even will have gotten to use a KoalaPad. It isn't hard to see that the current ninth grade computer literacy class is going to be grossly outdated and completely redundant for the students now in second grade.

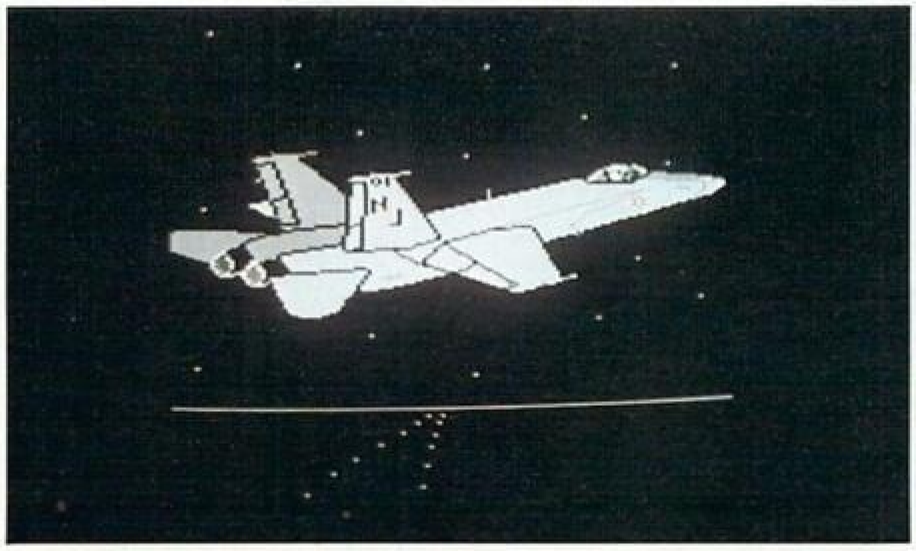
The two people at the top who are coordinating this whole program are the superintendent of the school district, Dr. James Boyd, and the administrative assistant, Margaret Finn. It was Mrs. Finn who drove me from school to school and introduced me to everyone along the way. Along with all of their other duties, these two people have taken it upon themselves to keep a complete, organized computer program running in the Miller Place school district. This now involves the acquisition of hardware and software, training teachers to use and teach the computer and keeping track of what all the teachers are actually teaching. In the future, their jobs are going to be expanded to include the hiring of additional computer teachers and perhaps even more difficult, the task of keeping on top of the whole computer industry. The computer program has grown at Miller Place over the past three years and as Mrs. Finn was taking me around, she was already spotting areas which were beginning to overlap.

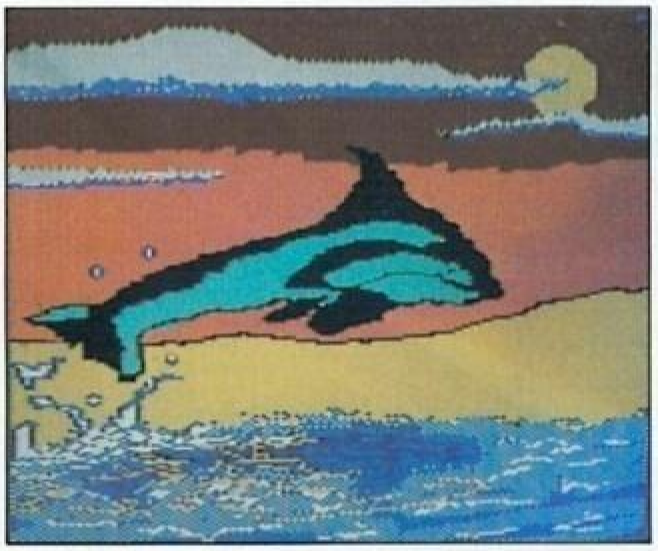
Regardless of any minor problems, the computer program at Miller Place is one which they have every right to be proud of. In addition to the work within the classrooms, the computers and software are available for other uses. Miller Place schools have held evening adult classes in BASIC and word processing. In addition, they have sponsored Saturday sessions for the school district's secretarial staff and members of the board of education.

Last year, Miller Place became one of the first school districts in New York to require the ninth-grade computer literacy class for graduation. The high school also has a four-part business course planned for the fall with units on databases, spreadsheets, word processors and programming.

I found it an exciting experience to visit this school district and I found myself wondering what it would have been like to use word processors in second grade. I envy these kids going through school, regarding the computer as a friend and learning to use it as the useful tool it is.

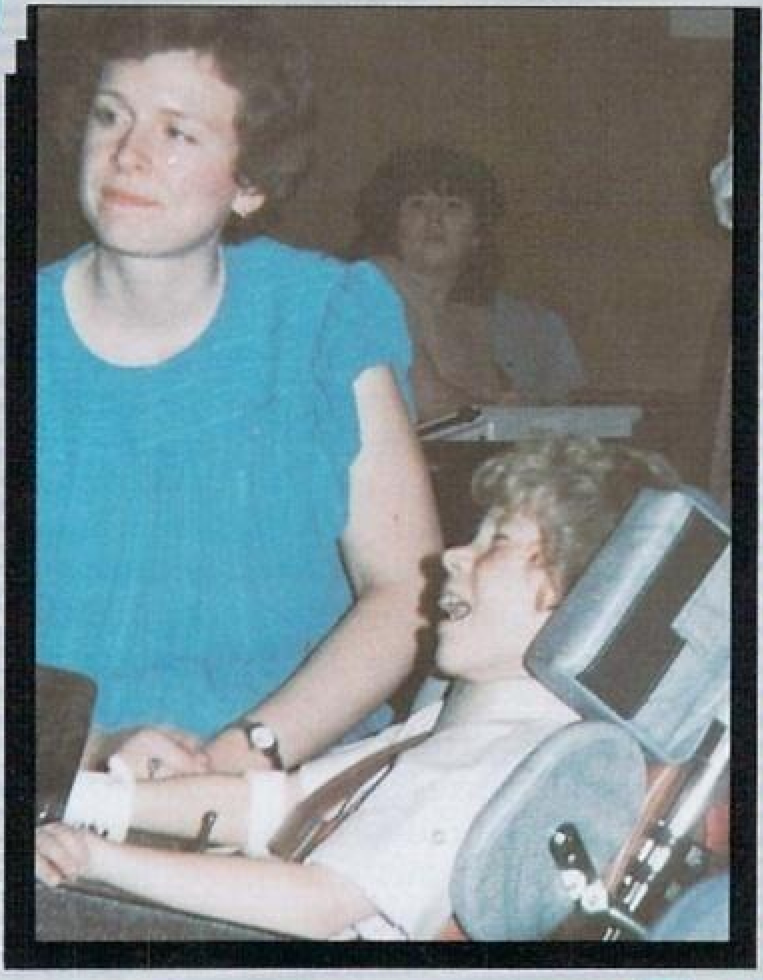
I would like to stop and thank each of the teachers that I talked to. I want to thank them for allowing me to interrupt their classes, lunch and previous free time to talk to them and watch the kids. And a last thanks to all the kids who didn't seem to mind my interrupting their classes. **C**





http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

Handicapped Kids Are Computing, Too



The computer doesn't notice whether your hands, feet, eyes or ears work. It also doesn't recognize a handicapped condition so it expects what it expects of every other child. It is for precisely this reason that the computer plays an invaluable role in education for the handicapped.

By Susan Mason
Illinois State University

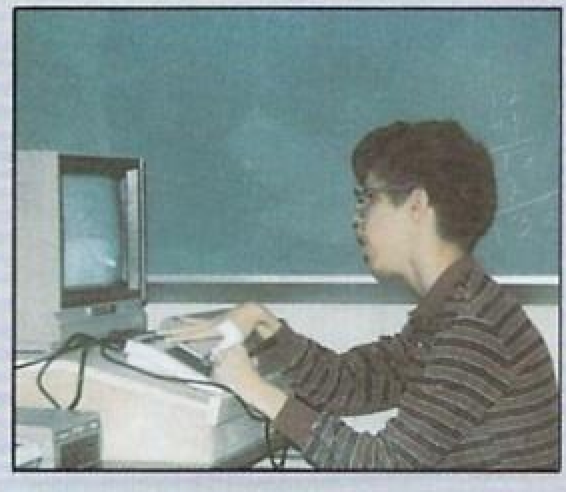
Commodore has done much to help the handicapped students here at Illinois State University. In the fall of 1983, I decided to develop a microcomputer-assisted communication prosthesis for a non-vocal student at our laboratory school. Commodore supplied a 64, color monitor, disk drive and printer to assist in that development. A Votrax voice synthesizer was purchased. My husband Larry put his programming skills to work. We pooled what I knew about the child and her needs with what the speech therapist, occupational therapist and classroom teachers knew, to come up with a workable system. By January we began to use the system. Several service organizations in the community provided funds for another complete system, so we now had one at the grade school and one at the high school level.

The main idea behind the project was to prepare a communication prosthesis for Lyndsay, a 13 year-old who had never spoken a word. She used a communication book. This is a very workable system, but the voice you get is that of the aide who assists in the scanning technique. I wanted something for Lyndsay that she could do herself and have an instant voice output.

Lyndsay and her teacher, Nannette Swanson, worked 20 minutes each day for four months to teach Lyndsay how to use her new communication prosthesis. There was an obstacle to Lyndsay's use of the computer: Lyndsay has cerebral palsy which limits her motor control. Because of that, we needed a single input switch to trigger the scanning for the system. We solved this by using a treadle switch. Just before school was out in the spring, Lyndsay had two days of 100% accuracy with her new voice.

For people who talk freely, this doesn't seem too spectacular. But you should see Lyndsay when she is at her machine! She concentrates so hard that you can almost see her brain working. As part of the system, a list of sentences has been added. Things a typical teenager would like to say such as, "I want a pizza," "You owe me two dollars," or "I want to go to Bergner's" (a local department store). She is so excited about using her computer that she'll have a smile on her face for half an hour before it's time to work. Her parents and brothers are excited about it too. Lyndsay may now use the computer and Votrax to speak and make her wants known—just like every other kid.

Until Lyndsay learned to use all of the text-building parts of her new system, her time on the computer was limited to scheduled teaching. This seemed such a waste of a valuable teaching tool that software was purchased to use the computer as an aid to teaching. Several public domain disks were purchased from our local Commodore users group. We also purchased a Chalkboard PowerPad touch tablet for creating graphics and several overlays. These will be used to teach not only Lyndsay, but all of the children in the special education department. The younger children love the graphics. The older children like this too, but they also like what the computer can do to improve their grades in class.



I really didn't expect so much excitement from the kids when the computer arrived at the high school. I thought they were already computer-wise and so it would be just another machine. I was wrong.

Word processing was a real hit. Students who used an aide to write all of their assignments were now able to do it themselves. Independence is what it's really all about.

The Commodore public domain software, available from Commodore educational dealers, has been extremely useful as a teaching tool for Laura Waugh, the high school orthopedic teacher. The history, English and math disks get a real workout. Hangman, of course, scores high on the list of activities when the students have a choice. One of the requirements of all high school students is to pass the Constitution tests—not an easy task for most. I had to take mine twice! But with the public domain software, Laura can insert study guides and questions to make that easier to accomplish. The students can even take their tests with the computer. They do drill and practice for math and add up to 14 columns of figures with ten digits in each row.

Bengy, one of our students, has little muscle control in his hands. Our KoalaPad and the *K-Paint* program, produced by Koala Technology, are a real treat for him to use. Bengy is a very good artist and does beautiful things with the *K-Paint*.

The hearing impaired classes plan to begin using the computer in the fall. It's something new for our teachers and they want to be on firm ground before they begin to teach with it.

I teach at the high school level. My class is called Life Skills Management and it's a special education class for learning disabled students. Some of the things our students work on are good self-esteem, good organizational skills and adequate study habits. The computer really helps with this. My students spend a great deal of their time in regular division classes where they compete for grades with their peer group. Some of them find doing homework assignments neatly and on time a pretty big assignment. Word processing helps them to do that. We also do term papers and homework with our Commodore 64.

I also teach English, history and math on an individualized study plan. The programs we have are very good for adding a new dimension to basic skills. The computer allows you to fix what you did wrong very easily. You can't build self-esteem any easier than to meet with success!

As you can see, we couldn't have found a better way to speak and to learn than with our new Commodore equipment. We only have one remaining obstacle: Lyndsay and other nonvocal students like her would like to have a female voice for their computer. **C**

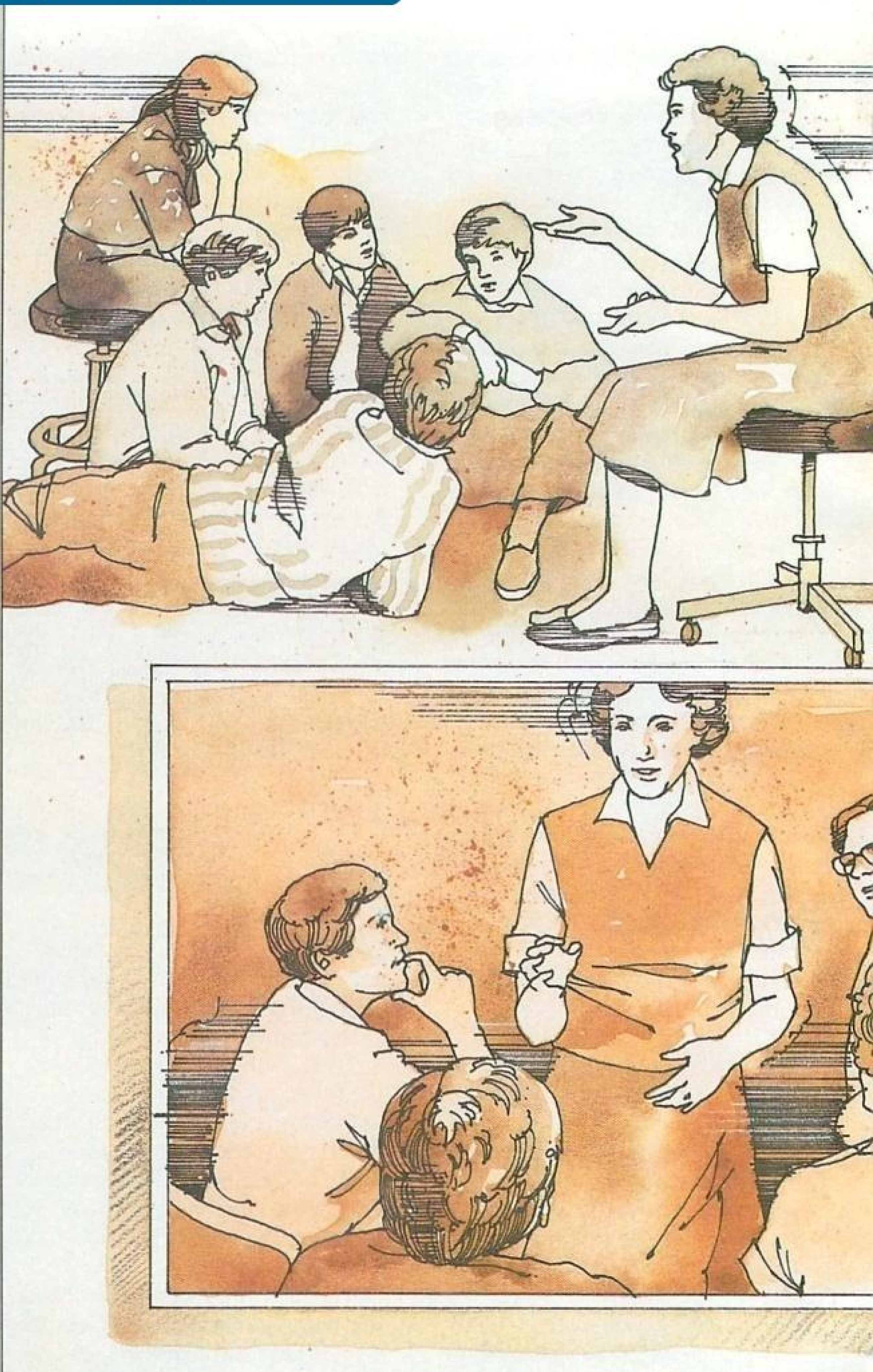
Kids and Computer Clubs

By Betsy Byrne,

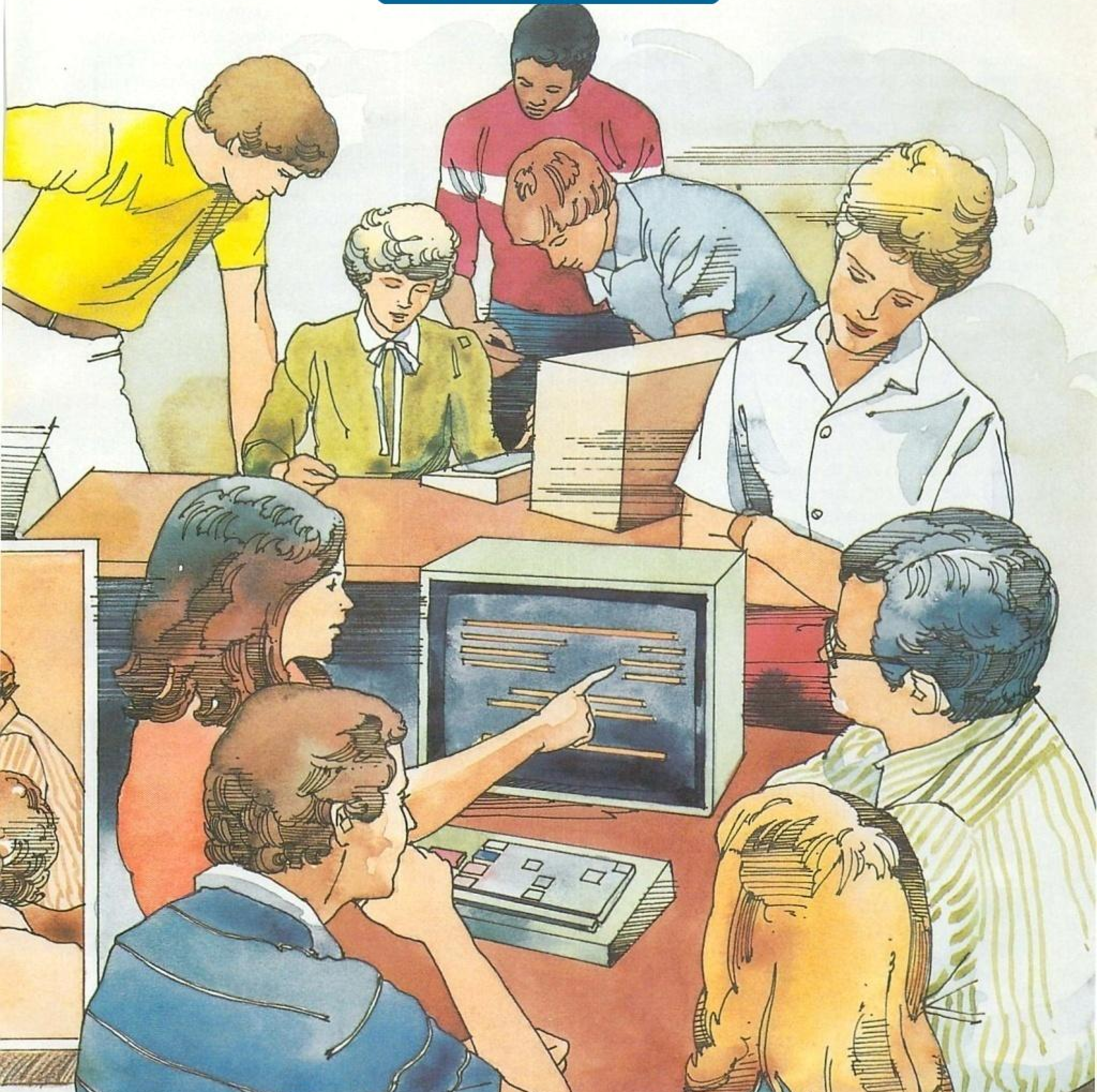
Associate Editor

I will tell you about some of the ways we have found in *our* town to help kids help themselves get more out of computing. I will share some ideas that I have gathered from friends in other parts of the country and give you a list of things you might want to try to get a Commodore Kid's Club organized in *your* neck of the woods.

Soon after we started the New Mexico Commodore User Group, I began hearing complaints. These complaints came from kids who felt that the adults in the group were only doing things at meetings that interested adults. The kids were very nice about the whole thing, but they felt that since a large number of members in NMCUG were kids aged about 9 to 17—many of whom were the only people in their family who were really into computers—that the group had an obligation to set aside a part of the meeting for this powerful minority. As president, it fell to me to present their ideas



ILLUSTRATION—JUDY NEWHOUSE



Kids, have you ever gone to a Commodore user group meeting in your town and felt a bit left out because adults were running the show? Or maybe you and a small group of friends get together on Saturdays or after school to share computer tips and talk about programming—but you wish you could include more kids or that you could do something neat like start a telecommunications bulletin board system (BBS)? If you are nodding your head right now, read on.

to the Board of Directors. First, I spent some time observing what went on at meetings and sure enough, the kids were not exaggerating. The adult members had a decided tendency to monopolize (also known as hog) the two or three systems that we set up at meetings. When a group of students did get a chance to take over a computer to show off someone's latest programming triumph or check out a hot new game, some crochety old person (aged thirty-five or so) was almost sure to elbow in and mumble something like: "Games, harumph! Out of my way, Sonny!" And before you could bat an eye, a boring spreadsheet or recipe program had been loaded in and the poor kids had wandered off, dispossessed and disappointed again. Obviously something had to be done.

Secretly I got together with some of the kids who had agreed to be leaders in our radical enterprise and some parents who had been drafted by their children. (We felt like the Founding Fathers drafting the Declaration of Independence.) We put together a plan that was so unusual (at the time) that I feared for my position as president—but the kids assured me I could be president of their group if it didn't work out, so I took a deep breath, put my affairs in order and approached the Board of Directors.

The plan that our committee came up with went like this: the kids were to have their own separate meeting once a month. They didn't want to exclude adults altogether (or maybe they were just too nice to want to hurt my feelings or those of the other old folks who had helped), but whenever possible, kids were to choose the topics for these special meetings and give the demonstrations.

They also wanted to have some sort of ongoing classes in BASIC where they could learn new programming techniques, work on projects and show off new routines they had written. They wanted a share of club funds devoted to things like field trips, contests and special projects. Also, a section of their own in our newsletter.

Guess what? The Board loved the idea! (And I did get elected to another term.) Arrangements were made to rent the church where we meet, one extra Saturday each month. One of the Board members, Al Rizzoli, even volunteered on the spot to coordinate the kids' meetings and set up their ongoing BASIC classes.

That was over a year ago and since then, more and more adults have wandered in, many of them parents who want to find out what their kids are really up to with these technological contraptions. Many have stayed and even started things like the LOGO programming language classes for kids who like LOGO better than BASIC. To encourage younger children (and their parents) to participate, we try to demonstrate the latest in educational software for ages three to eight, as well as the activities already mentioned.

A few months back, something interesting happened. Teachers began buying Commodores and joining the NMCUG in large numbers—and they were demanding equal treatment! They said they were finding the same things happening to them at meetings the kids had once complained about. Teachers have very special computing interests, most of which have to do with kids using computers and helping kids get the most out of computer use. So, I put my head together with some of the teachers and, hat in hand, I approached the kids. It was even tougher than talking to the Board, but the teachers assured me that I could be president of their group if it didn't work out.

This time the plan went like this: the teachers could share the same meeting day with the kids, using a separate room at the church to share ideas with each other during the first part of the meeting. When time came for demonstrations, everyone would gather in the main room together and participate in group discussion, etc. Teachers might even show off some of the software that they plan on using in their classrooms, getting the kids' opinions and letting the kids see what they might be up against in school. This plan could help the parents who attended the meeting, since they would be able to find out what their children were doing with computers at school and what the teachers thought about various Computer Aided Instruction materials (CAI software) designed for home use. And, naturally, the teachers would have their own section in the NMCUG newsletter.

The kids' first reaction to this plan wasn't nearly as enthusiastic as the earlier one from the Board. They were afraid that the teachers might start acting like, well... teachers. They might want to take over and run the meetings like a classroom or something. It was a new idea that kids just might know more than teachers on certain subjects (computers) and both groups seemed a bit nervous at first. But everyone decided to go ahead with the plan and at least try it out.

So far, it looks like we're really on to something. Everybody involved has a chance to look at both computing and computer education from another, valuable point of view. Kids are now able to see how hard both parents and teachers are trying to master computer terms and techniques —both for themselves and for their children and students. The parents and teachers learn things from the kids at every meeting and are amazed at how quickly kids pick up information and concepts when they are able to share ideas with each other. I can't speak for your town, but this approach is an idea we are all very proud of here in Albuquerque.

Want to Try It Yourself?

I promised that I would give you some tips and hints for start-

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ing a Commodore Kid's Club in your town. If you already belong to a Commodore User Group, you might want to try some of the things that the kids in our group did—mainly, finding a sympathetic adult to listen to your suggestions. There are usually a few people like me around who are willing to plot and plan with kids and help convince other adults that you really do need a group of your own. A bunch of you might get together and put your ideas in writing (using a word processor and printer, if possible). Be sure and mention that you plan to do more than just play games, since some adults (mistakenly) think that games are all kids are interested in. If your main group isn't able to arrange a separate monthly meeting for you at first, you might at least be able to get a corner of the regular meeting or another room in the same building. If all else fails, you can always meet at a member's house. A bulletin board system can also be a great place for kids to talk to each other about computers. If your group has one, ask about a special section of the database just for kids.

$$Money$$

Young folks are terrific at raising money—you might offer, for instance, to have a car wash or rummage sale to finance your group's activities if your main club doesn't have much money. In the summer or after school, your group might want to set up a computer kid hot line, a phone number people can call to hire kids to help them learn to use their computers or with computer-related tasks. This is a good way for club members to earn extra money (for themselves or for the club) and gain valuable computer and job experience as well. A computer store in our area is coordinating just such an effort. Kids come in and fill out an application explaining their computer background, a local newspaper supplies a free want ad for the Rent-A-Whizz-Kid service and kids are referred to (usually part-time) jobs. Jobs in computer stores, jobs tutoring people in programming, rewriting software for special applications, and more.

School Computer Clubs

What if there is no Commodore group near you? I'm not going to try to tell you how to start a full-blown Commodore user group. This subject has been covered often and well. In fact, it was the topic of the entire last issue of *Power/Play!*. But one way to get a kids' club going with a minimum of organizational headaches might be to ask your school to help you find a teacher or parent to sponsor a specifically Commodore club at school. Your school might already have a computer club—but it might deal with (heaven forbid) some other kind of computer—all schools do not have Commodores. In this case, talk to a sympathetic, computer knowledgeable teacher or parent, one who realizes that all operating systems were not created equal and that it can be very valuable to get together to discuss computer-specific programs and software.

High-Tech Helpers

So, your school is experiencing a budget crunch and has stopped all after-school activities? There is still at least one community resource that I can highly recommend. Your local computer store or some other high-tech industry in your community might be just the place to find help in organizing your kids' club and (maybe) even donations of money or equipment to keep you going. The best way to approach (and impress) people in these types of businesses is to get your plan together before you start; be able to clearly express what you are trying to do, why it is important and what kind of help you need from them. You or your parents may already know the computer store owner or your parents or one of the other potential club member's parents may work for a high-tech company (one that makes computer chips, circuit boards, etc.).

Put It In Writing

If all the hurdles have been crossed and your group is up and running, there are still a few tips you might need. Numero uno is: take advantage of all that computing power! Get your membership list into a database. You might be starting out with only a few people, but good groups attract lots of new members. Decide what information you may need about members (types of equipment, age, number of gorgeous sisters or brothers) and set up your program accordingly. Your main group (if you have one), probably already does this or you might find that you have a member with a good program at home that he or she uses to organize something else. If not, there are lots of inexpensive database programs on the market—get one and use it!

Another good idea is offering the special computing knowledge and resources of your club for community service projects. If several of you are in Little League or soccer, you might offer to help computerize some of their scheduling if they haven't already done so. Senior citizen centers are always looking for people to do computer demonstrations or introductory workshops and at election time, small local TV and radio stations often shout for help entering data and operating computers that make predictions based on the data. You get the idea. If you share your knowledge and expertise, you will strengthen the ties that bind your club members together, gain a large dose of pride in your own accomplishments and get a lot of community support for your group as well!

Good Luck!

Write me (care of Kids' Corner) and let me know how *your* kids' computer group makes out—and I will share your stories with the other kids who read *Power/Play*. Good Luck! **C**

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What I Did at Computer Camp

By Mimi Fogerty

Last summer, as usual, thousands of kids went to camp. What many of them did there, however, was a little unusual—at least compared to, say, five years ago.

This past summer, over 1,000 camps offered some form of computer education, from one hour a day video game sessions to intense eight-hour crash courses in assembly language. There were day camps and overnight camps; ones set up in local recreation centers and ones nestled in the mountains miles from the nearest city.

Regardless of specifics, these camps all had one thing in common. They were designed to teach all kinds of kids how to use a computer as quickly and painlessly as possible.

COMPUTER CAMP
ZAP!
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To give you an idea of what it was like to go to computer camp, here's a description of one day in the life of a camper at the Original Computer Camp headquartered in Santa Barbara, California. The Original Computer Camp was the first camp to teach computing in a recreational setting and it's one of the few accredited by the American Camping Association (ACA).

Imagine you signed up for a two-week residential session at one of their six locations: Lake Tahoe, Nevada; Lake Sequoia, California; Lake Greeley, Pennsylvania; Lake Winnesquam, New Hampshire; Steamboat Springs, Colorado or Santa Barbara, California.

Remember how, when you first arrived at camp, you and your parents met with the camp curriculum director to talk about your interests and your past experience with computers? Together you decided what computer language you should learn and chose the two classes you wanted to take.

The Original Computer Camp offered everything from introduction to microcomputers, LOGO, PASCAL, BASIC and FORTH, to 6502 Assembly Language, Robotics and the ever-popular "How to Write Adventure and Arcade Games."

When asked if he wanted to stay for a second session, Andrew replied, "I'm begging my parents. I wrote them and said I want to come back."

How much do the kids learn? According to Cindy, "In just two weeks, if you learned this much in school, it'd be a miracle." And Greg said, "I've learned to program and debug. I've learned PASCAL and BASIC, more about electronics and circuitry and how to operate different kinds of computers."

And the campers had good things to say about the counselors too. "I think that you are the greatest bunch of counselors in the world! I wish I could see you more often," is what John wrote to the staff after returning home from camp.

Sound good? Before you rush off to sign up for next summer's sessions, here are some things you should look into when choosing a camp.

First, what kind of education will you get? Are there classes for beginners as well as computer wizards? Are the teachers really qualified? Do they know how to teach as well as how to program?

What about the counselors? Are they rounded up the day before camp starts or do they have a genuine interest in kids and computers?

How many hours will you spend at the computer each day? The experts agree that between three and four is ideal. Any less and you won't really learn to program during the camp session. More and you'll find yourself surrounded by bleary-eyed kids glued to CRTs.

What's the ratio of computers to kids? One computer per camper is best because everyone can work at their own speed. Two kids on a computer slows things down a bit, but it does let the customized Teach Software pro-

campers help each other more.

Does the camp use the same hardware that you use at school? There's nothing more frustrating than spending a few weeks learning to program only to find that when you return home and begin school, none of it works on the school's computers.

Every day, you and fifty or so other seven to fifteen year-old campers rose at 7:30 a.m. After cleaning your cabin and eating breakfast, you were off to class by 9:30 a.m. In the classroom, you sat down at your own terminal, either an Apple II Plus or a Commodore 64 and started using the

duced by the Original Computer Camp's software development division which was designed to teach general problem solving skills that can be used on all computers as well as the specifics of the topic.

The directors of the camp think that having fun is just as important as learning, so they divided the day equally between computers and outdoor activities. After ninety minutes of computing, you could go horseback

riding one day and play soccer the next. The following day, you could do arts and crafts.

Lunch was at 12:30 p.m. and then there was an hour of free time so you could write home, relax or catch up on the sleep you lost last night (on account of the pillow fights).

It was back to the computer again at 2:00 p.m. If you spent the morning learning PASCAL, you could spend the afternoon in Robotics class. Last summer, the Original Computer Camp's curriculum revolved around robots and artificial intelligence. They had an army of RB5X robots that looked suspiciously like R2D2 and learned to navigate a maze if they were programmed correctly by a camper.

Just when you were getting tired of watching your robot crash into the maze walls, it was time to head off to the pool for a swim or to the lake for fishing and fun.

Dinner came next, followed by an hour and a half of optional activity time. You got to choose between spending more time on the computer and getting informal instructions in graphics, computer electronics or word processing, or doing another recreational activity.

At 8:00 p.m. the whole camp met for a campfire before going back to the cabins for the night.

Did the kids that went to computer camp like it? Well, here are some letters from the Original Computer Camp's "brag file". They're all written by kids who have just spent a few weeks at one of the Original Computer Camps.

Says Eric, a thirteen year-old camper from San Diego, "It was the greatest... so much more fun than regular summer camp. We had a bunch of things to do—horseback riding, swimming, frisbee, football, volleyball and, of course, computer classes."

What else will you do besides learn about computers? Make sure there are lots of recreational and social activities as well as computer time. After all, it's campfires and horseback riding that make a camp *camp* rather than summer school.

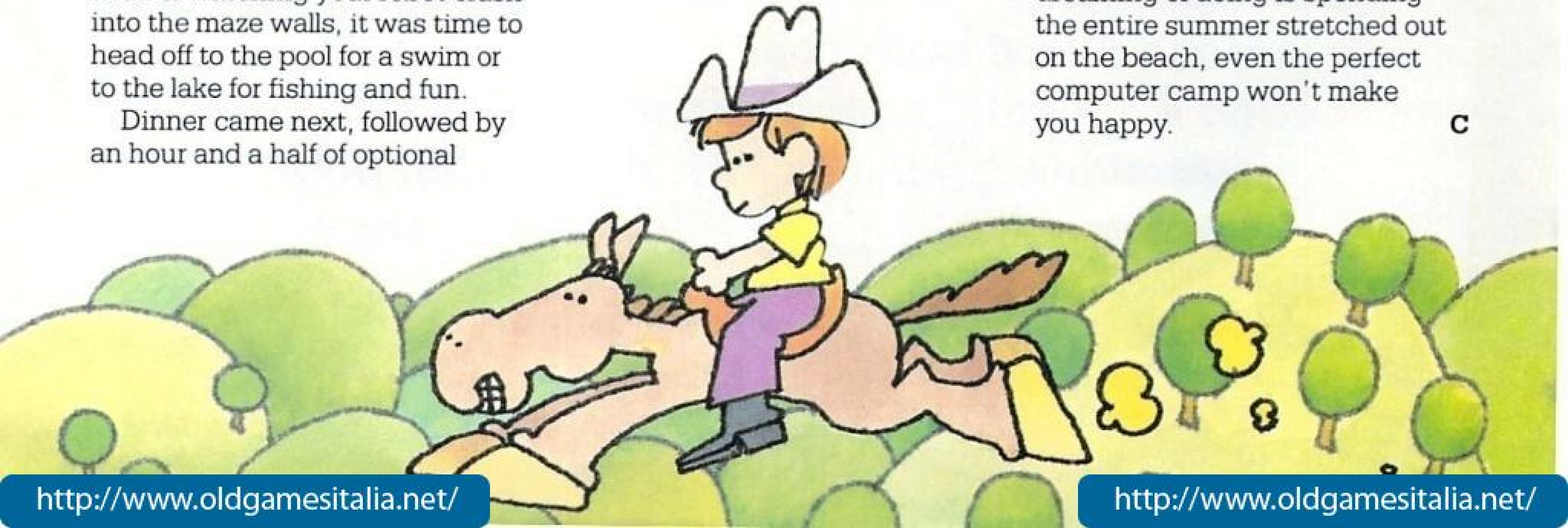
Is the camp accredited? The ACA has standards for camp facilities, camper-to-counselor ratios, camp philosophies, medical aid and general safety. Accredited camps are usually better than unaccredited ones because they must meet these standards each year.

How much does the camp cost? Tuitions vary widely and extra charges for special activities like horseback riding are common.

Does the camp offer scholarships? Although they may not advertise it, many camps have financial aid for campers who can't afford the $200 to $1,000 per session costs.

Check on the other campers, too. If you're a thirteen year-old girl who knows nothing about computers, you don't want to go to a camp full of seven year-old boys who only understand COBOL. Also, ask how many campers are returnees. The more the better, because kids who hated a camp will rarely return.

Last of all, make sure you really want to learn about computers next summer. If what you're really dreaming of doing is spending the entire summer stretched out on the beach, even the perfect computer camp won't make you happy. C



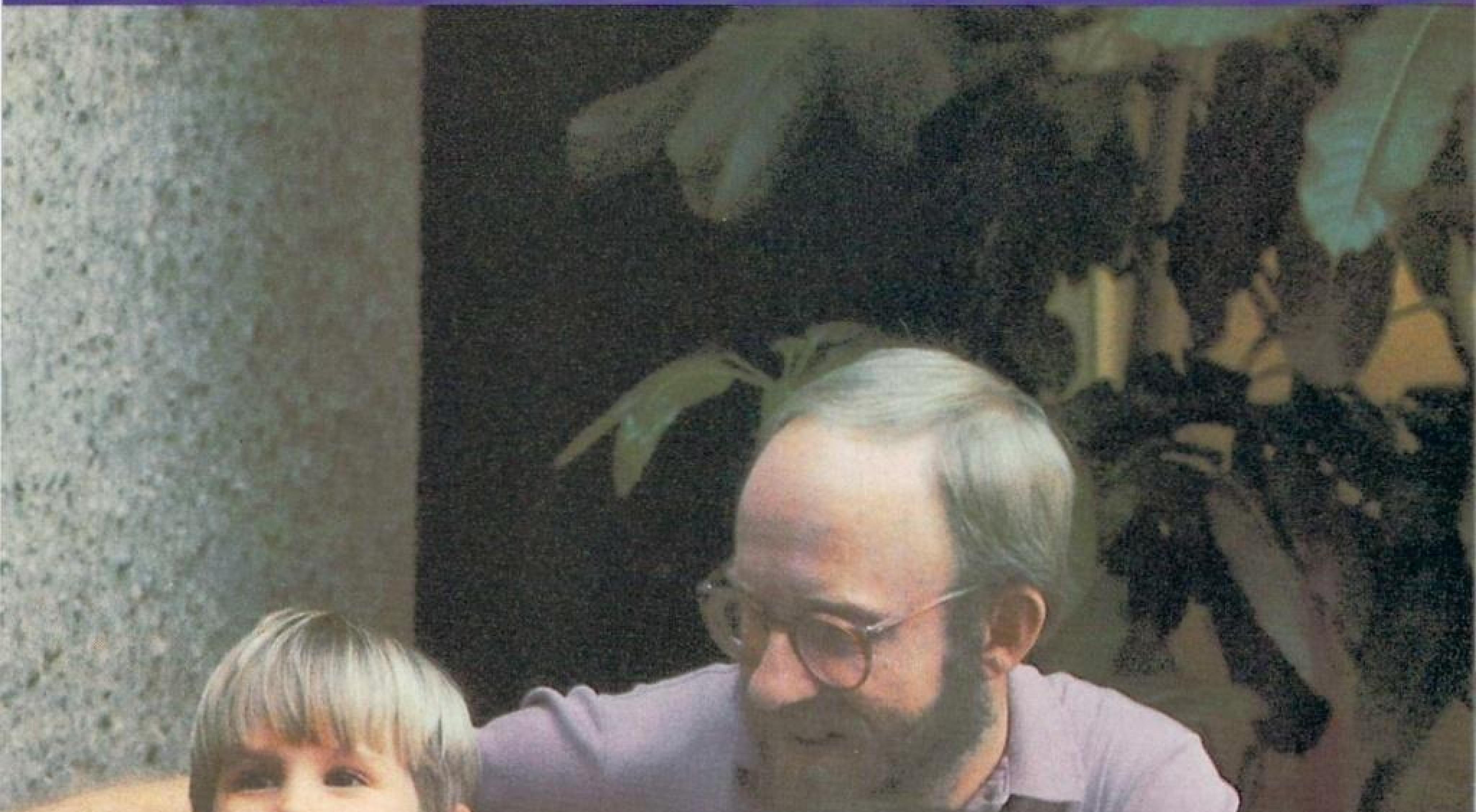
Fred D'Ignazio

Joyful Computerist

By Betsy Byrne,
Associate Editor

When you talk about kids and computers, it's almost inevitable that Fred D'Ignazio's name should come up. Although he is not the only writer who writes about the soft side of computing, he certainly communicates to his readers a unique sense of wonder and enthusiasm. He has written more than 20 books about both computers and robots and is a contributing editor to several computer magazines including Enter, published by Children's Television Workshop.

Eric, Fred and Catie D'Ignazio take time out to talk to Power/Play.



Fred writes about the small, day-to-day things that are happening in homes all over the world as families discover the marvels that new technology has to offer in the form of home computers, software and robots. In his columns, Fred usually discusses topics such as his own and his children's reactions to new educational software, the pros and cons of TOPO the Robot getting one out of bed in the morning and ways of using computers for artistic expression, such as the KoalaPad and accompanying software. He writes in short, uncomplicated, descriptive sentences, meant to be easily read by children as well as adults.

In his friendly discussions, he doesn't overlook the larger implications of technology, however. He often raises questions about issues that are on all of our minds, such as role of computers in education. In a recent column, he discussed how the almost universal availability of computers in both homes and classrooms might affect the relationship between students, teachers and parents, specifically describing the reaction of his son Eric's teacher when a computer came to school. He often talks about the role robots will play in our society. Wherever he goes, whatever he sees and writes about, he seems to have uppermost in his thoughts one question, "How will this new product (new idea, new language) affect children and, through them, the future?"

It is not surprising that kids and computers are Fred's favorite focus. In 1974, while he was working as a programmer in Washington, D.C., Fred smuggled a small terminal out of work in his briefcase to use with children at a local elementary school, where for a time, he spent enjoyable days playing *Hunt the Wumpus* with their terminal hooked up to a large mainframe computer in Chicago. When his daughter Catie was born, he tried his hand at writing, producing his first book, *Katie and the Computer.* When it was accepted for publication by Creative Computing Press, he changed his career from programming to writing.

Catie and Eric D'Ignazio with RBX5 robots.

Fred, Catie and Eric check out Heath's HERO.

Fred explains his philosophy, "In my life I want to have fun. I like anything that lets me be playful and be myself—I think, in fact, it's the joy of computers and robots that makes me so excited."

And excited he is. When he speaks about his favorite things, I dare you to not become just as excited and as enthusiastic as he! It is as if technology has given Fred and his children a vast playground to explore, complete with merry-go-rounds and bottomless cookie jars, and more than anything, he wants to share these treasures with everyone he talks to and with all of us who read his books and articles. Spend an hour with Fred D'Ignazio and you will never again doubt the very real magic that the programming wizards and robot makers have included in their creations.

Fred says that one of the things that both kids and grownups almost always ask him is, "How many computers do you really have?" Of course that was the first thing I asked him too and I laughed at his answer.

"We have actually lost count of how many computers we have, but we tell people in the low twenties. We are not a science fiction family—we have all these things (including several robots), but it's not like science fiction! They aren't hooked up and running eggbeaters or anything like that. They are generally arranged in the bedrooms throughout the house. I tend to have an affectionate, passionate relationship with computers but sometimes we're on the outs and we give each other the cold shoulder."

Fred describes what computers of the future will offer. "Something like the Mac (Apple Macintosh), but that's a limited view, too. That is the world of the desktop, with trash cans and file folders. That is sort of a sterile world, not nearly as exciting as the world of the sandbox, climbing a mountain or the various other things that people do . . . it's probably a far out concept. Computers, up to now, haven't been a very warm, imaginative environment for work or for play. But this won't last very much longer. Those of us who don't very much care what the computer is doing on the inside, but want to use it as a tool to do the kind of neat things we want it to do, will quickly change the whole atmosphere surrounding the way computers relate to people."

Fred is recognized as a leading robot authority and expert. He has written books and numerous articles about robots, has gone all over the world lecturing and speaking about robots, and is usually accompanied by at least one robot on his travels!

He says, "I get very upset with people who want to turn robots into appliances. Why should they *be* anything? Robots should be life forms. The robot is your computer friend and teacher, too. Robots can play games, but you and the robot are also working, as you do with a friend, on something you need to learn about. This way, you are preserving the personality of the robot, in fact, enhancing it! The charm that robots have, at least for me, and for humans throughout history, has been that they are just a reflection of us. Sometimes comical."

He feels that both computers and robots will become more transparent to users; much more human-like in years to come.

When I asked about his newest activities, his television appearances on ABC's Good Morning America show, and his latest books, Fred's eyes lit up and his enthusiasm was again infectious.

"What I'm doing now is working with TV people. Working on Good Morning America got me a spot with the ABC Newsbank. They have as clients large computer companies who are producing Info-mercials, half commercials and half information. I'll come on for about 26 seconds and tell people the good things that computer products will bring into their lives. I am also going to be doing some things for the New Tech Times on the Public Broadcasting Service."

The network plans to do a profile of Fred, along with several of his product reviews, during the season. When asked if he had been given any coaching for his TV appearances, he replied, "Oh yes—absolutely! All on the job."

Fred's new book, *Computing Together: A Parent and Teacher's Guide to Computing with Young Children* from COMPUTE! Books should be in the bookstores by the time you read this. It discusses choosing the right software for children and offers information that can make computing both fun and educational. Included are two programs: The Computer Friend and The Story Game, ready to type in. Fred told me that he has a young friend, Pete Huffman, who is working with him on some of his writing projects. Pete, 15, has severe allergies that keep him confined to the house—a drawback that he made into a learning experience, delving deep into the mysteries of his computer.

Fred and I met a new robot at the Summer Consumer Electronics Show in Chicago. His name is Hero, Jr. and he was created by the Heath Company, who brought us the original Hero robot—the best selling home and educational robot so far. It was heart warming to see Fred's excitement as he was introduced to Jr., a robot that incorporates many of the ideas that Fred has put on his robot wish list over the years.

The new robot is designed to be pet, companion, personal secretary and home security device—sound familiar? It talks and plays games with children, who can communicate with Hero by clapping their hands. Hero sings songs judiciously edited for a new technologically-gifted generation, like "Old MacDonald has a Robot" and "All Good Robots, Sing This Song" (to the tune of Camptown Ladies)! Jr. has a 100-year clock that can be programmed so that he can remember special dates or appointments—practically forever. He never needs to be turned off and comes with a personality that makes him want to seek out his human master. His price tag is less than $1,000.

One of Hero, Jr.'s creators, Wayne Wilson, chuckled as he told Fred that Jr. was already in testing at the time of the International Personal Robotics Conference last spring and how difficult it was for him not to blurt out details when he heard Fred (and other robot aficionados and experts) predicting these capabilities in the robot of the future! I won't tell you any more about Jr., I'll leave that to Fred. I'm sure that both Hero, Jr. and Fred's robotic friend Max Steele from CBE Toys, who attended IPRC with him, will be the subject of future columns. In his future columns, sure to be written with enthusiasm and joy, Fred D'Ignazio gives a special gift to all of us lucky enough to be able to see the wonders of technology —through Fred's special window on the future. **C**

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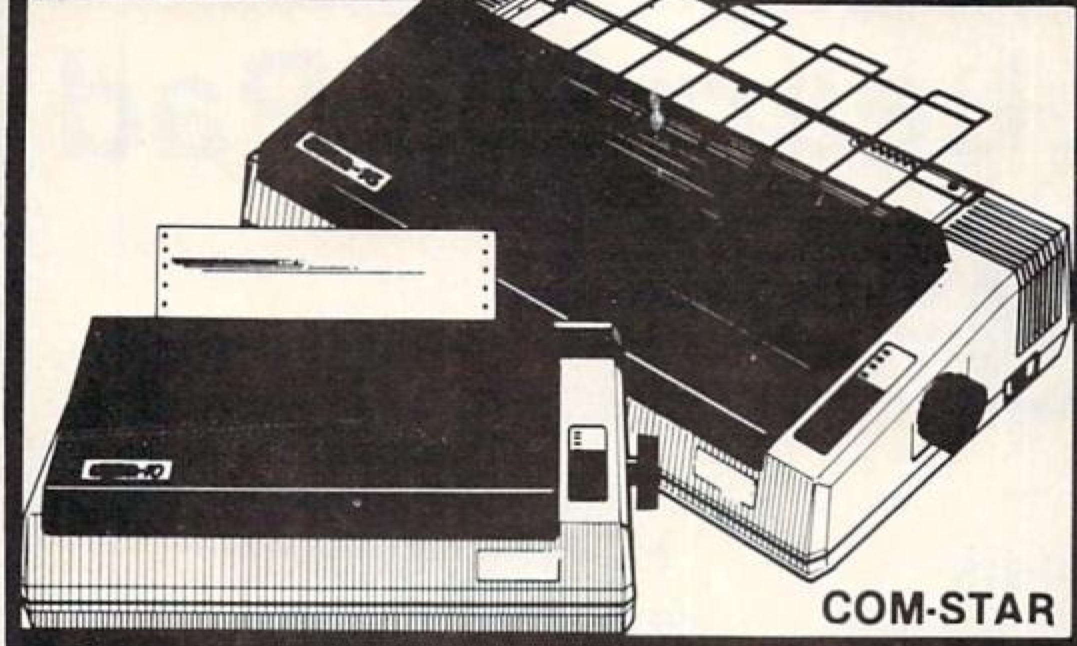

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This COMSTAR T/F (Tractor Friction) PRINTER is exceptionally versatile. It prints 8½" x 11" standard size single sheet stationary or continuous feed computer paper. Bi-directional, impact dot matrix, 80 CPS, 224 characters. (Centronics Parallel Interfact).

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Has all the features of the 10" COM-STAR PLUS+ PRINTER plus 15½" carriage and more powerful electronics components to handle large ledger business forms! (Better than Epson FX 100). List $599 **SALE $379.00.**

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Has all the features of the 10" COM-STAR PLUS+ PRINTER! It is especially designed for all IBM personal computers! 140-160 CPS HIGH SPEED PRINTING 100% duty cycle, 2K buffer, diverse character fonts, special symbols and true decenders, vertical and horizontal tabs.

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This is the worlds finest daisy wheel printer **Fantastic Letter Quality,** up to 20 CPS bidirectional, will handle 14.4" forms width! Has a 256 character print buffer, special print enhancements, built in tractor-feed (Centronics Parallel and RS232C Interface) List $699 **SALE $399.**

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Computer Learning Pad

Sale! **39⁹⁵** List $79.95

- **Makes other graphic tablets Obsolete**
- **Includes Special Printer Feature.**

Now you get this **Fantastic Tech Sketch Computer Learning Pad Program** with a **Professional Light Pen** Free! (39.95 value) plus the **Micro Illustrated Graphics Pad Program** that allows you to draw on your T.V. or monitor screen (better than Gibsons $99 light pen). Whatever you can draw on the screen you can print on your printer (a Tech Sketch Exclusive.)

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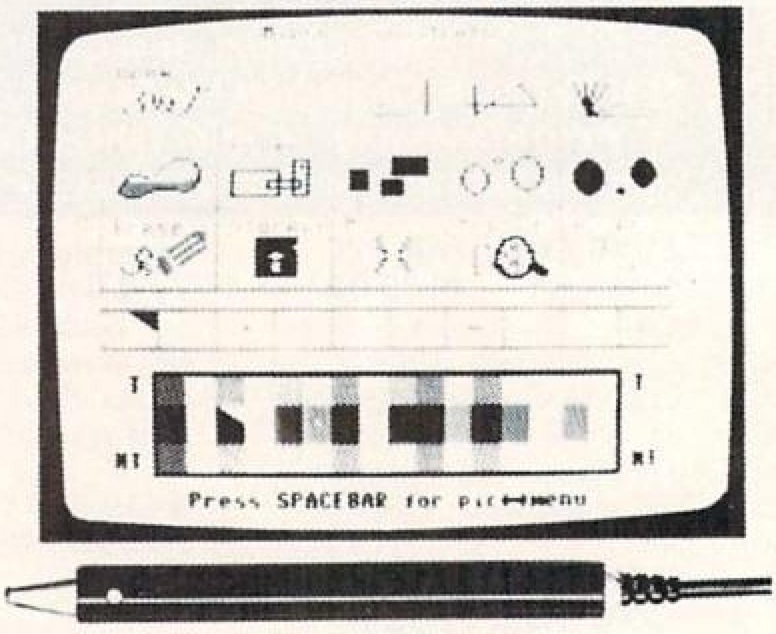
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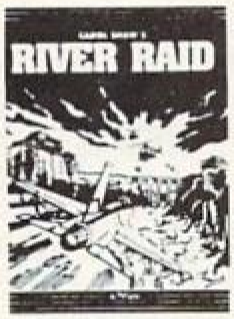
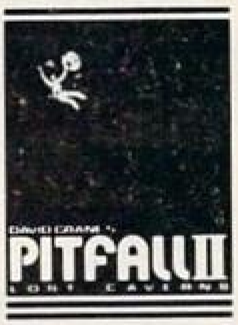
Fantastic Graphic Arcade Action Games For Your Commodore-64

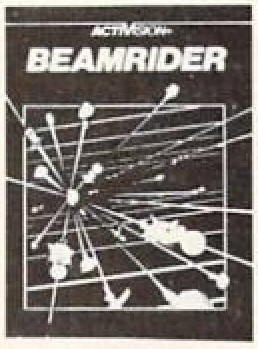


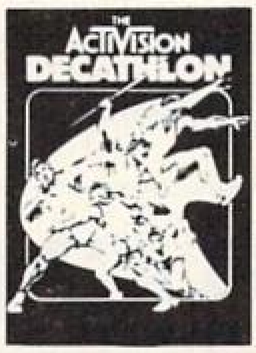
River Raid — Voted Best Action game by Electronic Games Magazine. Now you can play the extended version of the all time great home video game. Over 5000 enemy targets and fantastic action and sound will keep you busy for days. (Highly Recommended) List $39.95. **Sale $27.95**. (Disk)

Pitfall II - Lost Caverns — The feats of Pitfall Harry continue with the full advantages of the Commodore-64. The caverns are 27 levels deep and you must make Harry swim through rivers, float through the air on balloons, even freefall with perfect timing. Fantastic sound, graphics, and action. (Very Highly Recommended) List $39.95. **Sale $27.95**. (Disk)



Beamrider — (Better than Tempest) Move and fire along the grid as aliens attempt to destroy you. Super fast joystick action is the only thing that will keep you alive to make it to the next grid (99 grids) where more challenges await you. Super Action and Graphics. List $39.95. **Sale $27.95**. (Disk)



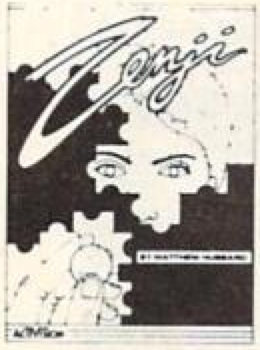


Decathalon — Finally an Olympic Event for two players at the same time (or play against the computer) Run, Hurl, Vault, Jump and more (10 events in all). Fantastic graphics and sound will keep you playing this one for days on end. Great Competition. List $39.95. **Sale $27.95**. (Disk)

Toy Bizarre — The toy factory has gone crazy. Toys spring to life and try to destroy you and the factory. Jump from level to level and close the valves, and capture the toys before the toys do you and the factory in. Fantastic Graphics and Sound. List $39.95. **Sale $27.95**. (Disk)

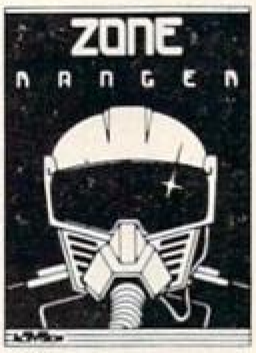
TOY BIZARRE
ACTIVISION

H.E.R.O. — Descend through the caverns with your dynamite and laser helmet; clear the tunnels to rescue the trapped miners; watchout for molten lava, animals, insects, etc. If you hit the lights they go out and you're in the dark. Fantastic Graphics and Sound combine with a superb theme to make this a best game for the year. List $39.95. **Sale $27.95**. (Disk)



Zenji — Find your way through the paths. Easy? The paths constantly change as the squares slide around. Use your senses to decide which way is out. If your senses fail, you are trapped and dead! Fantastic action. List $39.95. **Sale $27.95**. (Disk)

Zone Ranger — Better than Asteroids and Omega Race. You must pilot your starship first through asteroid alien territory and dock at your base, then you must make your way through the mazes past hostile aliens. Constantly 4-way scrolling screens make this a must for all game players. Fantastic Graphics and Action. List $39.95. **Sale $27.95**. (Disk)



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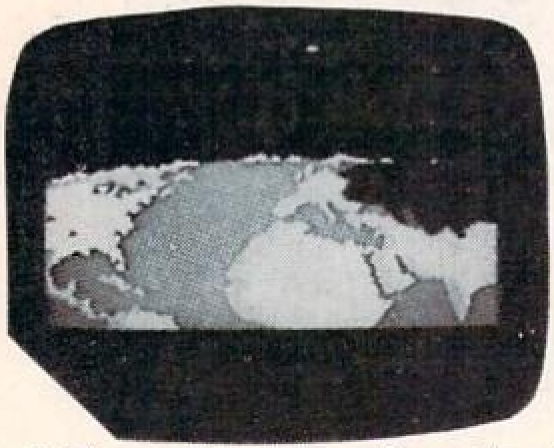
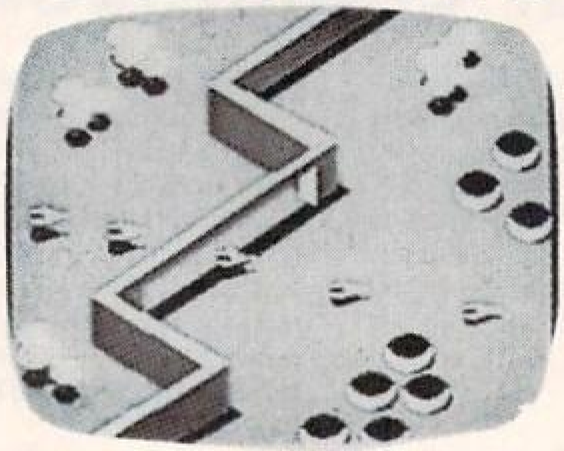
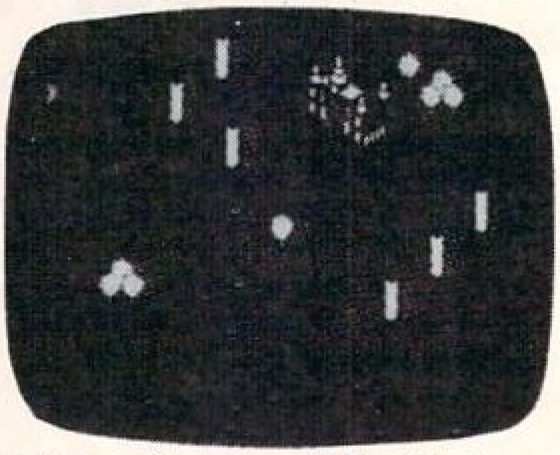




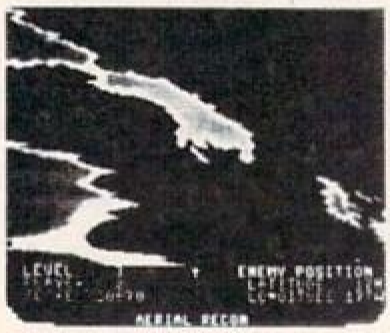


Raid over Moscow — The ultimate in multi screen computer graphics has arrived. (over six screens) The Soviets have launched an attack. First you must locate and destroy the ICBM missiles from your Stealth Bomber, then you must lead your squadron through the Soviet terrain to the Kremlin itself. Destroy the defenses, then destroy the defense center and finally the attack operations themselves. Fly planes, launch grenades, shoot bazookas. Super Fantastic Graphics, Sound, Animation. **(The best multi-level game we've seen!!!)** List $39.95. **Sale $29.95.** (Disk.) *Coupon $26.95.*

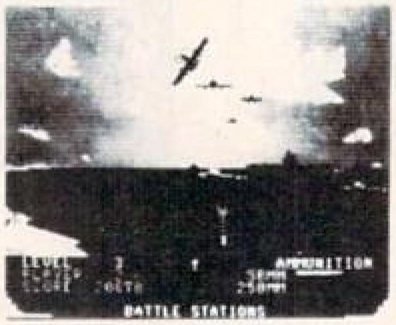
BEACH HEAD

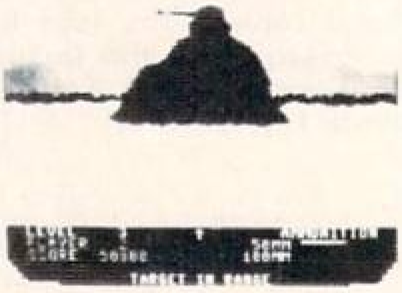
Beach Head — Multi Screen computer graphics at its finest. First you must maneuver your fleet through the mine laden channel while torpedoes are fired at you from all sides. Next you must engage the enemy planes with your anti-aircraft guns (best scenario graphics anywhere). Then you must sink the enemy fleet before they sink you. Next you maneuver to the beach head where your tanks must get through an obstacle course and finally fight the ultimate battle at Headquarters. All scenes in stunning 3-D graphics. (Will be the best graphics of 1984, definitely).

List $39.95. **Sale $24.95.**
Disk or Tape.



Actual Screens

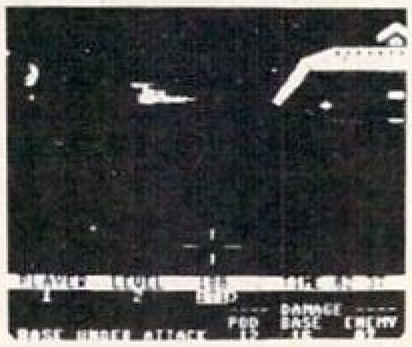




Actual Screens

NEUTRAL ZONE

Neutral Zone — Reach the outer edges of the galaxy. You must protect your spaceship from attacking enemy space ships while defending yourself from enemy missiles. Fantastic 360 degree 3-D High Resolution Graphics. Rated No. 1 for graphics in 1983. List $34.95. **Sale $24.95.**(Tape or disk).



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STRATEGIC OPERATIONS SIMULATOR

THE VIDEO GAME

- Official arcade version.

STAR TREK
STRATEGIC OPERATIONS SIMULATOR
SEGA

Now you can control the Starship Enterprise as you fight Klingons before they destroy your bases. Full 3-D view as well as overhead radar lets you know what's going on around you. Use your joystick to control warp drive, impulse power, photon torpedoes and phasers. But watch your shields, photon supply and warp power. Fantastic graphics and sound make this a must for everyone. List $39.95. **Sale $29.95** (cartridge).

Congo Bongo

- Official arcade version
- 3-D graphics
- Two screen displays
- One or two players.

Congo Bongo
SEGA

The famous arcade game featuring the coconut throwing gorilla, monkeys, hippos, sharks and rhinos now comes to the Commodore 64. Superb reproduction of the arcade machine challenges you to destroy the gorillas lair. List $39.95. **Sale $29.95** (cartridge).

ZAXXON

- Official arcade version
- Stunning 3-D scrolling graphics
- Multiple screen displays.

Now the famous invasion of robot Zaxxon's lair can be done in your own home. Invade the fortress, get past the fighters then through Zaxxon's home and finally destroy Zaxxon himself. Just like the arcade game. This one's fantastic. List $39.95. **Sale $29.95** (cartridge).

BUCK ROGERS

PLANET OF ZOOM

- Official arcade version
- 3-D color graphics
- Four Galactic screen displays.

BUCK ROGERS
PLANET OF ZOOM
SEGA

Just like the arcade version. Steer your ship through deadly electron posts as you fight off enemy space saucers and hoppers. Finally you meet the enemy source ship. If you get through all this you start again only this time the enemies have more powers and surprises. Fantastic graphics and sound. List $39.95. **Sale $29.95** (cartridge).

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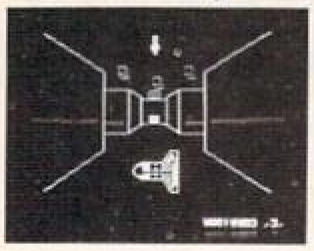


CYBERWORLD

List $49.95 **Sale $34.95**

NEW

This five-screen arcade adventure packs the computer with intense graphics and sound! You are a special Cyberleague agent in a universe full of hostile aliens and vicious robots. Joystick and keyboard transport you through 3-D rooms, space barriers, fleets of invaders, and warship-ridden quadrants of space. Over 100 sprites, 8 new character sets, and dozens of mind-boggling sound effects make up this multi-layered adventure. Animation, action, and strategy all combined into a game so extensive that two disk sides are jammed with game programs and data! Reach the ultimate rank of admiral and you may carve a niche in the permanent high-score list. A full-size book quality manual with full-color covers is included to guide you through your most exciting game experience.

NEW

Perplexian Challenger

List $34.95 **Sale $24.95**

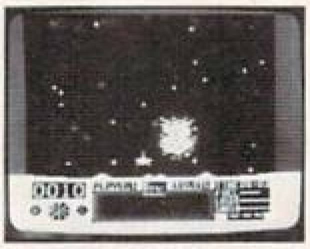
The incredibly responsive three-axis joystick control of a space fighter is in your hands: Split screen graphics provide a continuous display of your ship's instrumentation, as well as a three-dimensional, animated view of space.

You, as a pilot, must utilize lightning fast reflexes to destroy invading ships, and avoid their return fire. Simultaneously, you must maneuver your ship to capture space debris that remains from the explosions.

Outstanding graphics features include smooth 3-D rotations, split screens, and the most incredible high-resolution hyperspace sequence ever produced.

Programmed entirely in machine language, this action-strategy game is guaranteed to blow you away.

All the professional features you expect are included: automatic self-demo, high score retention, pause, and provisions for 1 to 4 players. Add to this, features you don't expect like easy-loading, and music during the load. Perplexian Challenger is a game that brings the arcade experience to your home.



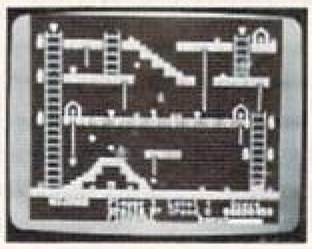
Wizard

List $49.95 **Sale $34.95**

Jump from ropes to ladders, dodge plummeting boulders and duck under deadly arrows in your quest for sparkling diamonds, gleaming bars of gold, and glistening pearls. With joystick in hand you must explore forty dazzling screens, each a new and exciting adventure. Take the key to unlock the doorway to your next spine-tingling level. Each key restores your magical powers, allowing you to cast over ten different spells. With these magic spells you have the power to overcome vicious creatures, terrifying traps, and perilous plunges.

Your Wizard is realistically animated in every possible direction. Dozens of movements are possible — jump over burning fires, shimmy up or down ropes and ladders, even slip down treacherous sliding staircases! Magic portals move your Wizard through midair and protect you from a myriad of fully-animated fiendish monsters. Catch an elevator to the top of the screen and dart through sliding gates in your quest for magic and treasure.

Wizard's fascinating variety of screens are sure to please and entertain, and of course you can build an unlimited number of your own levels using the construction set provided with your game.



BUILD YOUR OWN SCREENS!

Gothmog's Lair

List $44.95 **Sale $34.95**

Real-time adventure excitement at its best. Solve countless puzzles and slay over a dozen monsters by using the huge vocabulary of over 200 words. Two challenging difficulty levels await you with over 80 areas, each fully described in Old English script.

Menacing monsters, kniving villains, tattered code books and treacherous terrain are just a few of the situations you must overcome in your quest for the thirteen priceless treasures. More than seventy objects are invaluable to you in your search for glory and wealth!

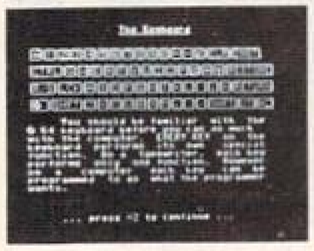
A full-size, thoroughly illustrated manual is included. Featuring color front and back, book quality, and a fold-out map, this "extra" further extends the professionalism of this game. The following are quotes from unsolicited testimonials sent to us by adventurers in Gothmog's Lair...

"I have extremely enjoyed Gothmog's Lair, and plan to buy more adventure games..."

Scott Tulman, Memphis, TN

"Gothmog's Lair is the best adventure I've ever played..."

Dennis Manochio, Jr., Saratoga, CA



PROFESSOR

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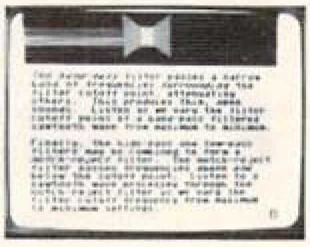

An in-depth self-tutorial for the Commodore 64 on a two-sided disk. This menu-driven tutorial covers every aspect of your C-64—BASIC, keyboard, sound, music, simple and advanced graphics. Quizzes test your comprehension at the end of many lessons! On-screen illustrations, sound effects and full-color interactive graphics make learning easy and interesting. The PROFESSOR is your ONLY choice for an all-in-one, thorough tutorial about the Commodore 64!

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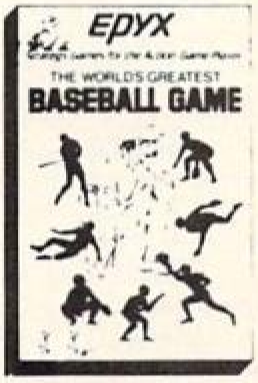
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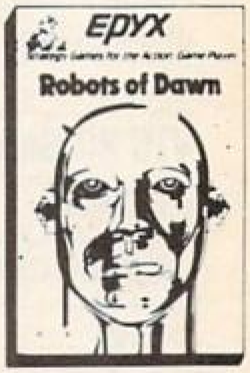
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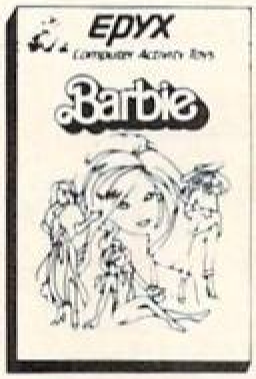

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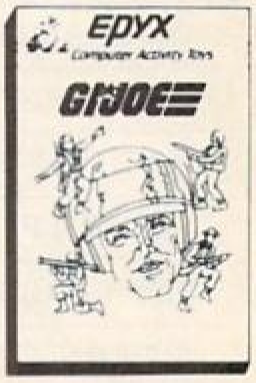

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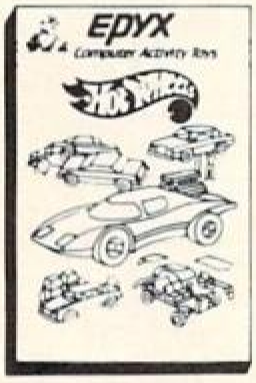

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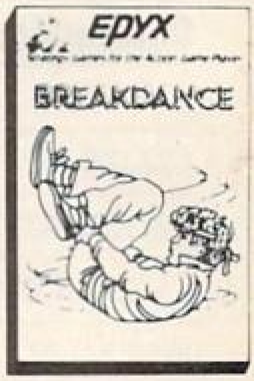
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VIC 20 Games		**Score**
CLOWNS	Jon Kirkbride, Jr., Cedars, PA	111,560
COSMIC CRUNCHER	Joe Lindo, Burlington, Ontario	998,180
GORF	Chad McCubbins, Coatesville, IN	998,910
JUPITER LANDER	Christopher Champlain, St. Petersburg, FL	207,400
MOLE ATTACK	Ryan Phillips, Montpelier, VT	427
MONEY WARS	Bob Grant, Bensalem, PA	81,950
OMEGA RACE	Jim Nelson, S. Elgin, IL	1,502,300 (5 ships)
RADAR RAT RACE	Jennifer Zaruk, San Diego, CA	147,240
RAID ON FORT KNOX	John H. Kohler, Daly City, CA	15,262
SEA WOLF	Alieia Kondalski, Toledo, OH	29,500
SKY IS FALLING	Eddie Moran, Suffern, NY	51,280
SUPER SLOT	Judith Wright, Cheektowaga, NY	10,960 coins (game rolled over at 9,999)
SUPER SMASH	Amy Talmadge, La Jolla, CA	31,630
VIC AVENGER	Nathan Brown, Newark, DE	23,120
Commodore 64 Games		
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JACK ATTACK		
KICKMAN	Josh Flint, Farmington, ME	577,200
LEMANS	Phillip Shipman, Riverside, CA	278,400
OMEGA RACE	Jonathan Wells, Watertown, CT	692,950 (5 ships)
SEA WOLF	George M. Fleming, Humboldt, KS	35,400
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STARPOST	Scott Barrish, Willowick, OH	712,900

If your score didn't set a record this time, keep playing! Maybe you'll topple these champion gamesters next time! **C**

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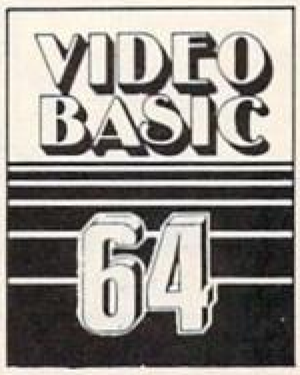

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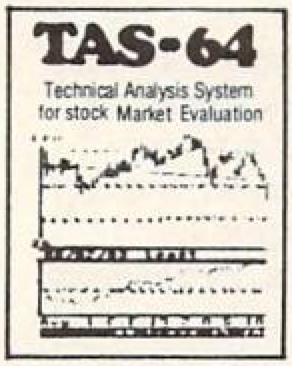

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Dear JL . . .

By Steve Finkel

Everyone needs advice at one time or another. The overcome write to Dear Abby, the overwrought write to Ann Landers, the overweight write to Richard Simmons. What each of these advisors has in common is that they're all experts in their field. Counseling is available for jobs, marriages, child-rearing, drugs and alcohol, physical and mental health and scores of other topics too trivial or unexciting to mention here. But when it comes to video gaming knowledge, Ann Landers and her sister Abby think *Pacman* is what you do before a trip, man. So where can the tormented gamer turn to get the right word on the various video vexations that arise in the course of everyday life? Obviously, this whole introduction would be pointless if the answer weren't "Right here!" the Joystick Lunatic. Combining the sound judgment of a mind only partially damaged at birth and the joystick acumen accumulated through a lifetime of devoted gaming, "Dear JL" will try to unravel some of the knottier problems facing gamers today. As the penniless man who was being sued said when the judge passed sentence, "Here goes nothing."

Dear JL,

I have a serious problem that I need advice for urgently. Every time I try to play a video game using the television as a monitor, my kid sister comes in and insists that she be allowed to watch reruns of the Brady Bunch on our VCR. My parents always side with her because she cries if she doesn't get her way. I would buy my own Commodore monitor, except that I can't afford one right now because all the money I make goes to purchase videotapes to replace the entire series of Brady Bunch tapes I set fire to. Of course, my parents took my sister's side on that one, too. I'm afraid that I might do something rash, particularly since when I want to destroy aliens to relieve the frustration I feel, the only aliens I get to see are Cindy, Bobby, Jan, Peter, Marsha and Greg. My sister even talked my parents into hiring a live-in housekeeper named Alice (it took three days of nonstop crying) just to annoy me! And now she's encouraging our parents to have four more kids! I'm in desperate need of good advice.

Signed,
Exasperated, Considering
Human Sacrifice

Dear Ex-Con:

You do need good advice. One question you should ask yourself is, "How would Mike and Carol handle this?" You have two options available to you. The first is to have your sister legally committed to an institution. This would seem on the surface to be a perfect solution, since there would probably be no problem getting her committed, considering the facts. But there are legal fees, court costs, hospital bills. Rather than put this financial strain on your family (your parents might even have to let Alice go), there is an easier solution.

Whenever your sister insists on watching the Brady Bunch when you want to play video games and your parents side with her, simply make your parents watch the show along with your sister. After a short while they'll be begging you to play video games. And if your sister continues to carry on, maybe your folks will decide to get her committed on their own. Follow this advice and you'll never have to hear the Brady Bunch theme song again.

Dear JL,

I have a real problem loading game cartridges. Every cartridge I buy from the store never fits into the slot in the back of my computer. The salesmen always assure me that the software cartridge is the right size for my 64, but they're always much too big. I can kind of squeeze it into the slot, bending the cardboard sides of the cartridge to make it fit, but it won't plug into the machine right. What can I do?

Signed,
Loading In Question

Dear Lo I.Q.:

Try taking the cartridge out of the box first before plugging it in. And don't let law enforcement officers catch you on the street after dark.

(Continued On Page 76)

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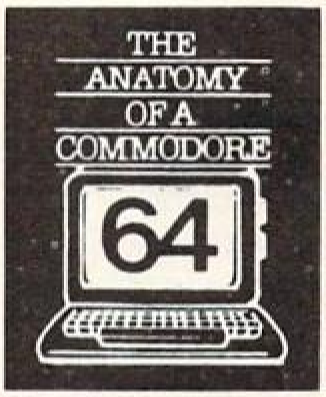
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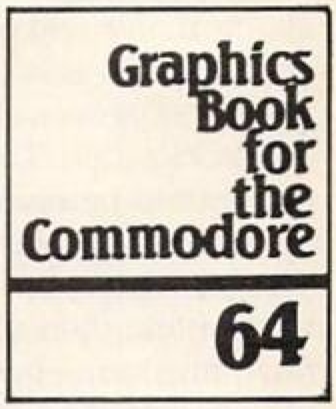
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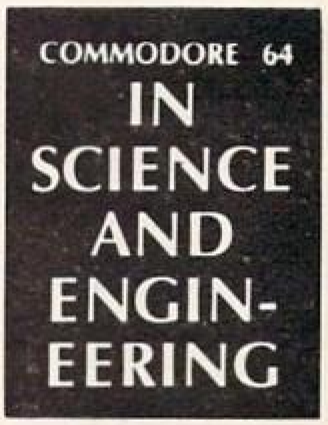
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Joystick Lunatic

(Continued From Page 74)

Dear JL,

What can I do to prevent the dread Fire-button Thumb that afflicts many avid game players? First circulation is cut off, then there is severe swelling, followed by discoloration. Then the thumbnail shrinks painfully and finally the thumb must be amputated. The possibility of losing the whole hand then arises. Right now, my thumb swells to the size of a grapefruit and turns bright purple after a game. I'd hate to have to give up gaming, but I don't want to lose my thumb.

Signed,
All Thumbs and Terrified

Dear A.T. & T.

If you're going to worry about every little ache and pain, maybe you're just not cut out to be a gamer. Crybaby.

Dear JL,

I am an extremely attractive young woman who is independently wealthy. I love watching and playing games, although I have a serious problem. I broke a nail pressing the fire button and I'm afraid that if I play again, I might break another and it would take days to grow back! Whatever shall I do?

Signed,
Scarsdale Timid Shooter

Dear Scar-Ti-Shoo:

It tears my heart out just thinking of the mental and physical anguish you must be going through right now. There is only one way to fight this and that's to get right back on that joystick and play. I know it will be difficult, so I'm offering my services as your personal coach to help you on that long arduous road back to full gaming confidence. I look forward to our getting together and working this through and I know you'll show your gratitude in an appropriate fashion. Also, thanks for including your picture with your letter. Although the staples damaged it a bit, you saved me $3.50 off the newsstand price.

Dear JL,

I've been reading your advice column for some time and I am appalled at your total lack of knowledge, poor judgment and atrocious taste. I find you and your column crass, misleading, dull-witted and a complete farce. The advice you give merely reflects your overall ignorance. Why don't you crawl back into the slime pit you slithered out of?

Signed,
Unsigned

Dear Mom:

I wish you wouldn't write me at the office.

Dear JL,

What do you do when you get hiccups in the middle of a game without a pause button?

Signed,
Hiccuping Fool

Dear Hic:

I don't get hiccups while I play. I suggest that you stick to games with pause buttons.

Dear JL:

I have some serious questions on gaming etiquette that I hope you can help me with. My girlfriend, Junebug, has me to the point of insanity because of her reactions to my so-called lack of video couth. One time we play a game, she acts coldly toward me because a true gaming gentleman would let a lady go first. The next time we play, she gets upset because she had to go first. She claimed that a true gentleman would go first so the lady could see the proper way to play each level. Now she refuses to play at all, claiming that a gentleman would know the appropriate video behavior and she won't play with someone who was not a gentleman. I'm at my wit's end; what should I do?

Signed
Semi-Likable Unqualified
Gentleman

Dear S.L.U.G.,

Not only are you not a gentleman, you're a wuss. If I were in your shoes (and fortunately I'm not, since I have a backbone), I would probably squash Junebug. Where'd you pick her up anyway, the insect farm? A gentleman, when accosted in the manner she accosted you, would politely insert the joystick up her left nostril. If this little incident is all it takes to put you at your wit's end, your wit must extend as far as you could spit. I'm surprised you even managed to send a letter, since you don't seem to have the guts to lick the stamp. Now get your act together, before I send my kid sister to your house to physically intimidate you.

Dear JL,

What do you get when you drop a gamer with his 1541 floppy drive from the top of the Empire State Building? What is it when the freeze button is pressed to stop the Donkey Kong age? What do you get when you cross a joystick with a nuclear submarine during a snowstorm?

Signed,
Mediocre Punster

Dear Me:

You get a compact disk player. Good question, very droll. Monkey pause. Pretty clever, quite amusing. Third, what kind of a question is this?! What do you think this column is, Dear Milton Berle? I've got better things to do than waste my time and space on garbage like that last ridiculous question! **C**

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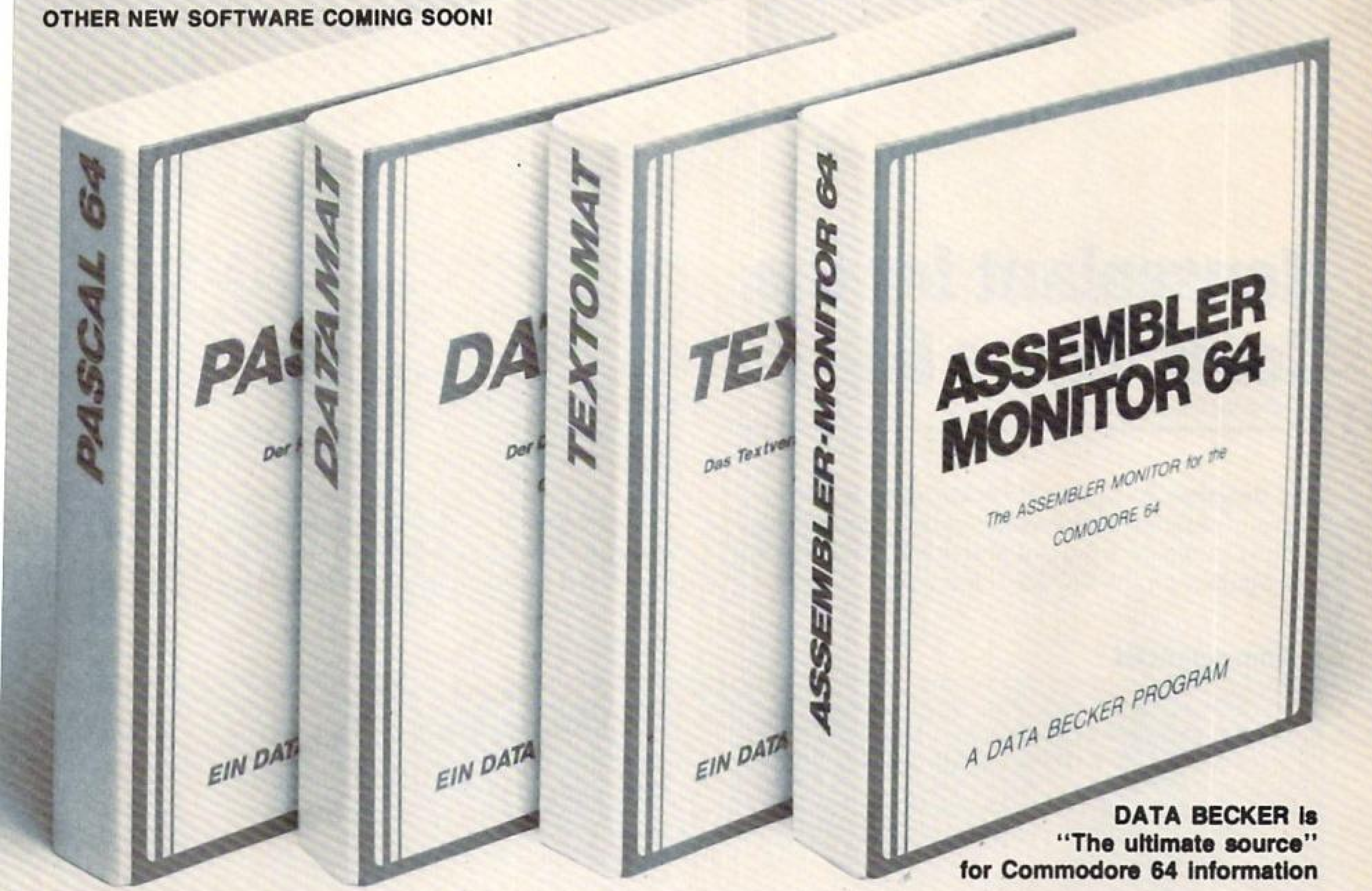

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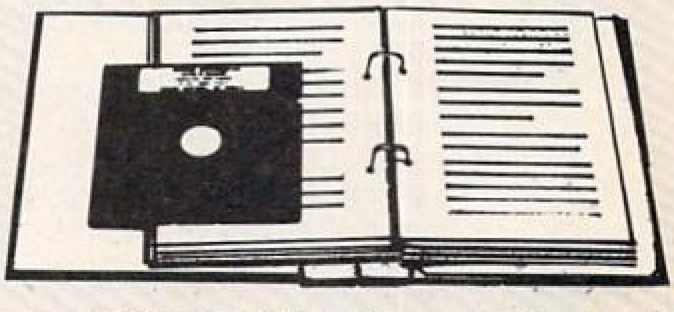

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Houseplant for the Commodore 64

By Marilyn Sallee

In the June/July issue of *Power/Play* we ran a program entitled "Houseplant" which was labeled for the Commodore 64. Unfortunately, that program was actually for the VIC 20. If you typed "Houseplant" in and tried to run it on the C64, it did work to some extent, but the instructions were scattered across the screen and the plant was invisible. Fear not, C64 owners, here is "Houseplant" fixed up for the 64. If you have already typed the program in, the lines to change are:
100, 105, 106, 110, 120, 130, 140, 170, 600, 615, 620, 625, 626, 630, 635, 640, 1200, 1210, 1220, 1230, 2500, 2540, 2550, 2560, 2570, 2580, and 3000.

In most instances you do not have to retype the whole line. Look at the line and see what is different and just retype those few symbols.

Houseplant 64

```
90 REM HOUSEPLANT FOR THE COMMODORE 64
100 IS=10:DW=0:DF=0:DL=0:SIZE=0:CW=0
    :CF=0:CL=0:CS=0:POKE 53281,1:DAY=0
    :LEAF=1
105 LW=0:LF=0:LS=0:BL=INT(RND(1)
    *25+25):POT=1:CH=55296:SC=1024
    :R$=CHR$(13)
110 PRINT"[CLEAR,BLUE]
    PUT PLANT IN WHICH WINDOW TO
    START":INPUT"[RVS]N[RVOFF]ORTH,
    [RVS]S[RVOFF]OUTH,[RVS]E[RVOFF]
    AST";LOC$
120 IF LOC$="N"THEN IW=14:IP=14:IL=7
    :POKE 53281,6:GOTO 160
130 IF LOC$="S"THEN IW=3:IP=7:IL=7
    :POKE 53281,7:GOTO 160
140 IF LOC$="E"THEN IW=7:IP=10:IL=30
    :POKE 53281,14:GOTO 160
150 GOTO 110
160 DAY=DAY+1
170 PRINT"[CLEAR,BLACK]DAY "DAY,R$"
    [DOWN]COMMANDS"R$"[DOWN2,RVS]W
    [RVOFF]ATER"R$"[RVS]F[RVOFF]
    EED"R$"[RVS]L[RVOFF]OCATION"
180 PRINT"[RVS]R[RVOFF]EPOT"R$"[RVS]D
    [RVOFF]O NOTHING[DOWN2]":INPUT C$
190 ON-(C$="W")-2*(C$="F")-3*(C$="L")
    -4*(C$="R")-5*(C$="D")GOTO 200,
    300,400,500,1000
195 GOTO 170
200 LW=0:IF DW>=IW THEN DW=0:GOTO 1000
220 PRINT"OVERWATERED":DW=0:CW=CW+1
    :IF CW>3 THEN D$="ROOTROT"
    :GOTO 3000
```

```
230 GOTO 2000
300 LF=0:IF DF>=IP THEN DF=0:GOTO 1000
320 PRINT"OVERFED":DF=0:CF=CF+1
    :IF CF>3 THEN D$="ROOTBURN"
    :GOTO 3000
330 GOTO 2000
400 IF LOC$="N"THEN PRINT"[RVS]S
    [RVOFF]OUTH OR [RVS]E[RVOFF]
    AST WINDOW"
420 IF LOC$="S"THEN PRINT"[RVS]E
    [RVOFF]AST OR [RVS]N[RVOFF]
    ORTH WINDOW"
430 IF LOC$="E"THEN PRINT"[RVS]S
    [RVOFF]OUTH OR [RVS]N[RVOFF]
    ORTH WINDOW"
440 INPUT LOC$:IF LOC$="N"OR
    LOC$="S"OR LOC$="E"THEN 450
445 GOTO 400
450 CL=CL+1:IF CL>5 THEN D$="DRAFTS
    FROM MOVING":GOTO 3000
460 GOTO 120
500 LS=0:IF SIZE>=IS THEN IS=IS+10
    :POT=POT+1:GOTO 1000
520 PRINT"POT TOO BIG":POT=POT+1
    :CS=CS+1:IF CS>3 THEN
    D$="OVERPOTTING":GOTO 3000
530 GOTO 2000
600 IF POT>0 THEN POKE CH+826,4
    :POKE SC+826,160:POKE CH+866,4
    :POKE SC+866,160
615 IF POT>0 THEN POKE CH+825,4
    :POKE SC+825,95:POKE CH+827,4
    :POKE SC+827,105
620 IF POT>1 THEN POKE SC+825,160
```

Houseplant

```
    :POKE SC+827,160:POKE SC+865,160
    :POKE CH+865,4
625 IF POT>1 THEN POKE SC+867,160
    :POKE CH+867,4:POKE SC+824,95
    :POKE CH+824,4
626 IF POT>1 THEN POKE SC+828,105
    :POKE CH+828,4
630 IF POT>2 THEN POKE CH+824,4
    :POKE SC+824,160:POKE CH+828,4
    :POKE SC+828,160
635 IF POT>2 THEN POKE CH+864,4
    :POKE SC+864,160:POKE CH+868,4
    :POKE SC+868,160
640 IF POT>3 THEN POKE CH+823,4
    :POKE SC+823,160:POKE CH+829,4
    :POKE SC+829,160
650 FOR I=1 TO LEAF:READ P
    :POKE SC+P,65:POKE CH+P,5:NEXT
    :RESTORE
670 PRINT"[SPACE4,DOWN,RVS]
    HIT ANY KEY[RVOFF]"
675 IF POT>3 THEN PRINT"LARGEST POT"
680 GET K$:IF K$=""THEN 680
690 RETURN
700 IF LOC$="S"THEN LEAF=LEAF+INT(RND
    (1)*3+1)
720 IF LOC$="N"THEN LEAF=LEAF+INT(RND
    (1)*2)
730 IF LOC$="E"THEN LEAF=LEAF+INT(RND
    (1)*2+1)
740 RETURN
1000 IF DW<IW AND DF<IP AND DL<IL AND
     SIZE<IS THEN 1030
1020 GOTO 1040
1030 GOSUB 700:DW=DW+1:DF=DF+1:DL=DL+1
     :SIZE=SIZE+1:PRINT"PLANT GROWING"
1031 IF LEAF>BL THEN 2500
1032 GOSUB 600:GOTO 160
1040 IF DW>=IW THEN PRINT"PLANT TOO
     DRY":LW=LW+1:IF LW>3 THEN
     D$="THIRST":GOTO 3000
1050 IF DF>=IP THEN PRINT"NEEDS
     FERTILIZER":LF=LF+1
     :IF LF>3 THEN D$="HUNGER"
     :GOTO 3000
1060 IF SIZE>=IS THEN PRINT"POT BOUND"
     :LS=LS+1:IF LS>3 THEN
     D$="SUFFOCATION":GOTO 3000
1080 IF LOC$="N"AND DL>=IL THEN
     PRINT"PLANT GETTING LANKY"
     :D$="TOO LITTLE LIGHT":GOTO 1100
1085 IF LOC$="E"AND DL>=IL THEN
     PRINT"PLANT IS UNHAPPY"
     :D$="TOO LITTLE LOVE":GOTO 1100
1090 IF LOC$="S"AND DL>=IL THEN
     PRINT"PLANT GETTING SUNBURN"
     :D$="TOO MUCH HEAT":GOTO 1100
1095 GOTO 1110
1100 J=RND(1)*10:IF J<2 THEN 3000
1105 GOTO 2000
1110 GOSUB 600:GOTO 160
1200 DATA 786,746,785,787,706,744,748,
     745,747,666,705,707,703,709,704,
     708,784
1210 DATA 788,743,749,665,667,626,783,
     789,742,750,702,710,664,668,625,
     627,663
1220 DATA 669,586,624,628,782,790,701,
     711,585,587,546,662,670,623,629,
     584,588
1230 DATA 506,545,547
2000 GOSUB 600:LEAF=LEAF-1
     :IF LEAF<1 THEN D$="LOSS OF
     LEAVES":GOTO 3000
2020 GOTO 160
2500 PRINT"[CLEAR,DOWN,SPACE8]
     CONGRATULATIONS!"R$"[DOWN3]
     YOUR PLANT BLOOMED IN"DAY"
     DAYS!!"
2520 FOR I=1 TO 3000:NEXT
2530 PRINT"[CLEAR,DOWN,SPACE10,GREEN,
     SHFT A]"
2540 PRINT"[SPACE9,SHFT A,SHFT B,
     SHFT A]"R$"[SPACE8,SHFT A,RED,
     SHFT Q,GREEN,SHFT A,SHFT N,
     SHFT A]"R$"[SPACE7,SHFT A,SHFT M,
     SHFT A,SHFT B,SHFT A,RED,SHFT Q,
     GREEN,SHFT A]"
2550 PRINT"[SPACE6,SHFT A,RED,SHFT Q,
     GREEN,SHFT A,SHFT M,SHFT A,
     SHFT N,SHFT A,SHFT N]"R$"[SPACE5,
     SHFT A,SHFT M,SHFT A,SHFT M,
     SHFT A,SHFT B,SHFT A,RED,SHFT Q,
     GREEN,SHFT A,SHFT N,SHFT A]"R$"
     [SPACE4,SHFT A,SHFT M,SHFT A,RED,
     SHFT Q,GREEN,SHFT A,SHFT M,
     SHFT A,SHFT N,SHFT A,SHFT N,
     SHFT A,SHFT N,SHFT A]"
2560 PRINT"[SPACE6,SHFT A,SHFT M,
     SHFT A,SHFT M,SHFT A,RED,SHFT Q,
     GREEN,SHFT A,SHFT N]"R$"[SPACE5,
     SHFT A,SHFT M,SHFT A,SHFT M,
     SHFT A,RED,SHFT Q,GREEN,SHFT A,
     SHFT N,SHFT A,SHFT N,SHFT A]"R$"
     [SPACE4,SHFT A,RED,SHFT Q,GREEN,
     SHFT A,SHFT M,SHFT A,SHFT M,
     SHFT A,SHFT N,SHFT A,SHFT N,
     SHFT A,RED,SHFT Q,GREEN,SHFT A]"
2570 PRINT"[SPACE6,SHFT A,SHFT M,
     SHFT A,RED,SHFT Q,GREEN,SHFT A,
     SHFT N,SHFT A,SHFT N]"R$"[SPACE5,
     SHFT A,SHFT M,SHFT A,SHFT M,
     SHFT A,SHFT B,SHFT A,RED,SHFT Q,
     GREEN,SHFT A,SHFT N,SHFT A]"R$"
     [SPACE4,SHFT A,RED,SHFT Q,GREEN,
     SHFT A,SHFT M,SHFT A,SHFT M,
     SHFT A,SHFT N,SHFT A,SHFT N,
     SHFT A,RED,SHFT Q,GREEN,SHFT A]"
2580 PRINT"[SPACE8,BLUE,CMDR *,RVS,
     SPACE3,RVOFF,SHFT POUND]"R$"
     [SPACE9,RVS,SPACE3,RVOFF,BLACK]"
2720 PRINT"[DOWN,SPACE3,RVS]
     TO PLAY AGAIN[RVOFF]":GOSUB 670
     :GOTO 100
3000 PRINT"PLANT DIED FROM ";D$
3020 PRINT"[DOWN,SPACE3,RVS]
     TO PLAY AGAIN[RVOFF]":GOSUB 600
     :GOTO 100
```

C

Checkers for Two, One or None!

For the Commodore 64

By Roger S. Macomber

Checkers has been a popular game for programmers to simulate and several checkers-playing programs have been published. The program described here allows checkers to be played in three modes: two human opponents, one human against the computer, or the computer against itself. BASIC has been used for the main program and a short machine language addendum is used to create the initial graphics.

Entering the Program

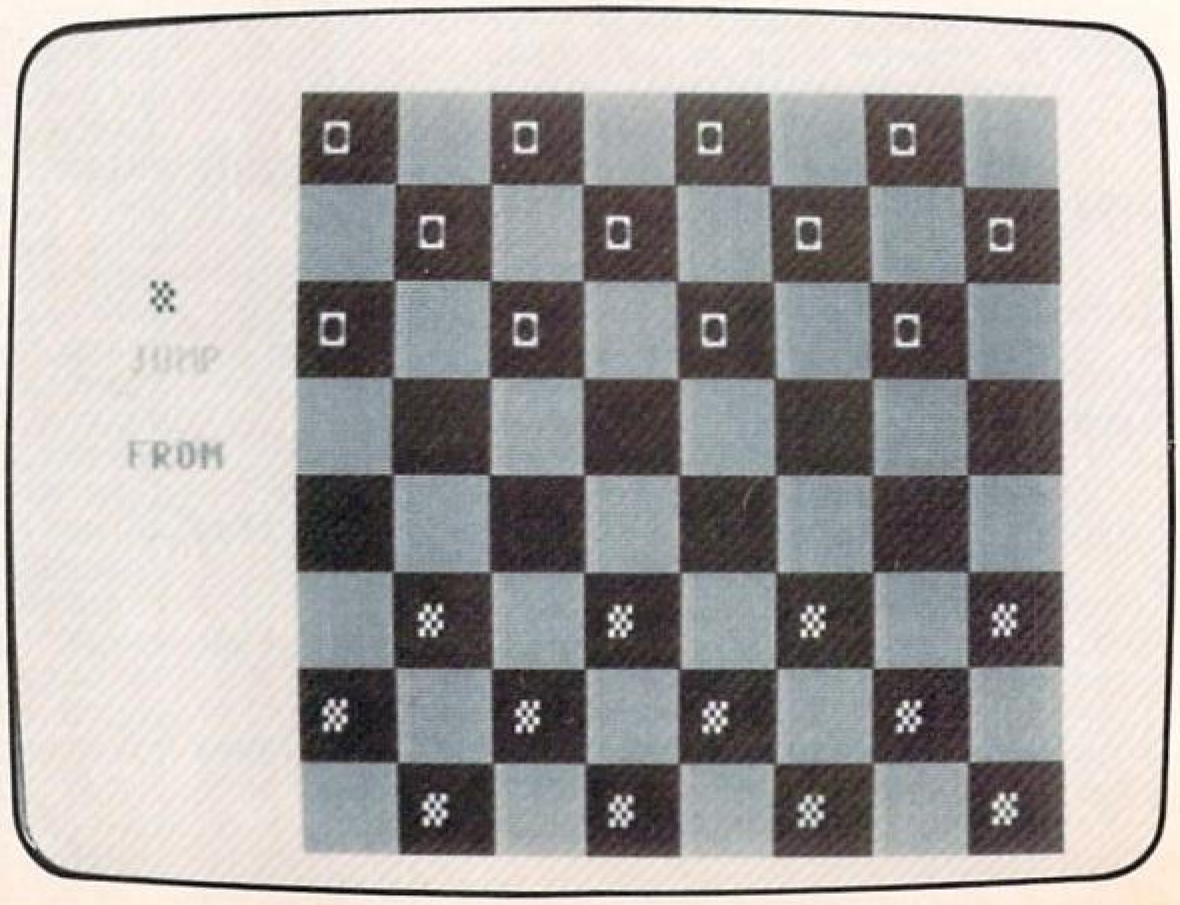
After typing in the program, instructions 5-1010, it will be necessary to append the 128 bytes of machine code listed at the end of the program. To do this, carry out the following sequence:

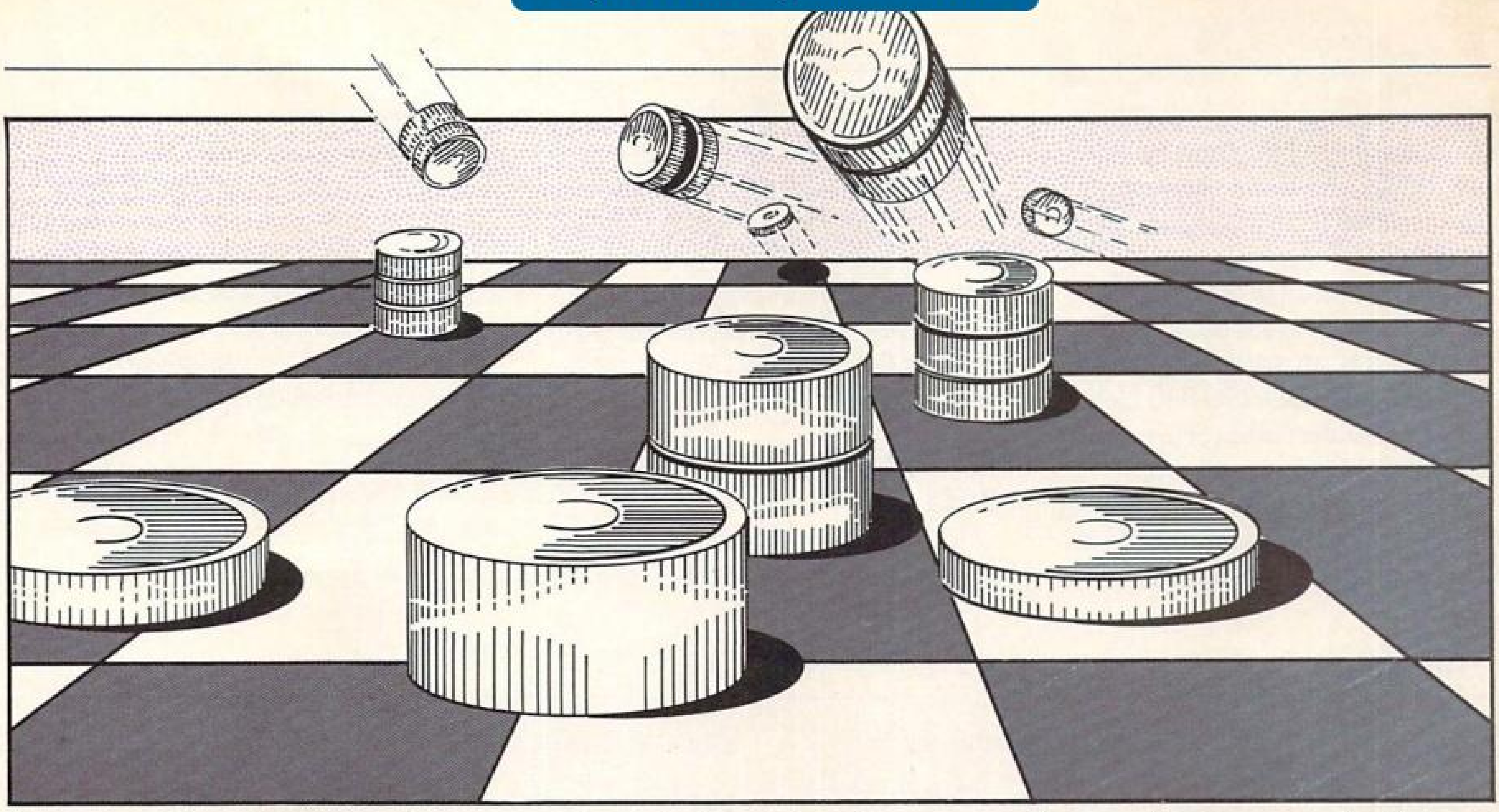
1. PEEK in 45 and 46 to locate the end of the BASIC program, then POKE in a value 130 bytes greater. This allocates more than enough space to accommodate the machine code.
2. Add the following instruction: 16 FOR I=0 TO 127: INPUT B%: POKE S1+I,B%: NEXT:STOP.
3. RUN the program and enter the 128 bytes of machine code slowly and carefully as prompted.
4. Delete instruction 16, then SAVE the program.

Checkers Anyone?

Let's begin with two human opponents. RUN the program and enter "2". The screen will fill with the familiar red and black checkerboard. As shown by the prompt above "JUMP", the opponent at the bottom with checkered pieces goes first. To move, enter the coordinates (row then column) of the starting point; these will appear on the screen below "FROM". Next, enter the destination coordinates (row then column) and these will appear under "TO". You will be prompted with "OK?". If you like your choice, enter "Y"; any other entry will clear your coordinates for a new entry. The program will check to make sure you've entered a legal move, then it will move your piece as instructed. The other opponent, with circular pieces, now receives the prompt and enters the next move.

When you are ready to jump your opponent's piece, first enter "J", which will show up under "JUMP". Next, enter the number of jumps (1-5) which will be displayed after the "J". Enter your starting coordinates as before, then enter your destination coordinates in order, one for each jump. You will be prompted for each destination after the first. If your selection is OK, enter "Y", and the jumps, assuming they're legal, will be executed in order. If the first jump is found to be illegal, it will clear the coordinates





for reentry. If any jump after the first is found to be illegal, it will prompt you for a revised set of destination coordinates. Finally, if you miscounted jumps and need to cancel the remaining jumps, just enter "C" for the destination row.

Sooner or later you and your opponent will reach each other's back line. At this point, your piece will be "kinged" and can then move forward or backward. The game continues until one player wins. The screen is then cleared and a short reverie is played.

The Computer as an Opponent

Now, let's see how good you really are. RUN the program and enter "1". Everything looks the same on the screen. You, the lower player, are prompted for a move just as before. After you make your move, the computer will be prompted to select its move. Sometimes it does so very rapidly, but other times it has to think awhile. After it moves, you will again be prompted for your next move.

Soon you will see that the computer is not too tough of an opponent. For example, it doesn't know how to handle multiple jumps. And it sometimes passes up a jump in favor of another move. But, like you, it is never allowed to make an illegal move. So, as long as you keep your guard up, you should win. If you feel unchallenged, try playing give-away, where the first opponent to exhaust his pieces *wins.*

The Computer Against Itself

When you no longer feel the desire to play, and would rather observe, just RUN the program and enter "0". Watch as each set of pieces tries to gobble the other until only one type of piece remains. As you watch the last few players trying to catch each other, you may begin to realize that the moves seem somewhat random. Nonetheless, eventually the job gets done!

A Brief Look at the Program

Although a detailed analysis of the program is left to the reader, the highlights of its organization are described here. Instructions 5-90 set up the board. SY(1) and SY(2) are the symbols for the pieces; SYS S1 calls the machine language routine for creation of the checkerboard.

Lines 45-65 put in the 12 pieces for each opponent, while lines 70-85 provide colors for symbol SY(1), the letters in "OK?", and the coordinates appearing below the words "JUMP", "FROM" and "TO". (The colors of these three words are set in line 40.)

Line 95 prompts the appropriate player. Instructions 100-190 GET coordinates for the starting point (R$ and C$) and first destination (R2$ and C2$), making sure they are integers from one to eight. If the first entry is a "J" (for L$), the computer then GETs the number of jumps (J$). In the case of multiple jumps, line 195 refers to lines 800-845, which input the additional jump destinations.

Lines 200-210 ask "OK?" and GET your response. L and L2 (lines 215,220) are the locations in screen memory of the starting point and destination of the move, respectively.

Line 225 determines whether the piece to be moved is a king. Then a series of instructions (230-275) test the move for legality: is the right piece being moved? (230); is the destination vacant? (235); if unkinged, does the piece try to move the wrong direction? (260,265), etc.

Lines 280-290 erase the piece from the starting point and move it to its destination. If multiple jumps were input, line 295 transfers control to lines 900-930 to get the next jump destination, update the coordinate list, then back to line 215 for the tests. Any opponent's piece that was jumped disappears.

Line 292 tests whether the game is over, and if so, lines 600-635 play a tune and designate the winner. Lines 305-340 clear the coordinates and return for the next player's input.

If the computer is the opponent (P1), line 335 transfers control to lines 400-500 to select a legal move when it's the computer's turn. The selection is more or less random, but is subject to the same tests as in lines 230-275. If the computer is playing itself (P=0), line 495 keeps the program in lines 400-495 until a winner is crowned (line 485).

A Word About the Machine Code

For those interested in machine language programming, the assembly language corresponding to the appended machine code is given at the end of this paper. An analysis of this routine will be instructive to those wanting to see how the checkerboard is actually POKE'd into screen and color memory.

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Checkers

```
5 PRINT"[CLEAR]":INPUT "NUMBER
  OF PLAYERS (0,1 OR 2)";P
10 PRINT"[CLEAR]" : SY(1) = 81
   : SY(2) = 102 : K = 0 : I = 1
   : JP(1) = 0 : JP(2) = 0
15 S1 = 256*PEEK(46)+PEEK(45)-130
20 SYS S1
25 PRINT"[HOME]";"[CYAN]";"
   [SPACE5]COL 1[SPACE3]2[SPACE3]
   3[SPACE3]4[SPACE3]5[SPACE3]6
   [SPACE3]7[SPACE3]8";
30 FOR RO = 1 TO 8 : PRINT:PRINT
   :PRINT"[SPACE6]";RO:NEXT
35 PRINT"[HOME]":PRINT
   :PRINT"[SPACE5]R"
   :PRINT"[SPACE5]O"
   :PRINT"[SPACE5]W"
40 PRINT "[DOWN4,BLUE] JUMP
   [DOWN3,LEFT4,]FROM[DOWN3,
   LEFT3,YELLOW]TO[DOWN]";
45 FOR RO = 1 TO 3 : READ LS
50 FOR CO = 1 TO 7 STEP 2
55 L = LS + 4*CO
60 POKE L,SY(I): NEXT CO
   : NEXT RO
65 I=I+1 : IF I < 3 THEN 45
70 POKE 55698,6 : POKE 55699,6
   : POKE 55818,9 : POKE 55819,9
   : POKE 55938,7
75 POKE 55939,7 : POKE 55978,7
   : POKE 55979,7 : POKE 56018,7
   : POKE 56019,7
80 POKE 56058,7 : POKE 56059,7
   : POKE 56098,7 : POKE 56099,7
   : POKE 55578,0
85 POKE 56258,2 : POKE 56259,2
   : POKE 56260,2
90 I = 2 : J = 0 : IF P = 0 THEN
   400
95 POKE 1306, SY(I)
100 GET L$ : IF L$="" THEN 100
105 IF L$<>"J" THEN R$=L$
    : GOTO 135
110 POKE 1426,10
115 GET J$ : IF J$ = "" THEN 115
120 IF ((ASC(J$)-53>0) OR
    (ASC(J$)-49<0)) THEN 115
125 POKE 1427,ASC(J$)
    : J = ASC(J$)-48
130 GET R$ : IF R$ = "" THEN 130
135 IF ((ASC(R$)-56>0) OR
    (ASC(R$)-49<0)) THEN 100
140 POKE 1546, ASC(R$)
145 GET C$ : IF C$ = "" THEN 145
150 IF ((ASC(C$)-56>0) OR
    (ASC(C$)-49<0)) THEN 145
155 POKE 1547, ASC(C$)
160 GET R2$ : IF R2$ = "" THEN
    160
165 IF R2$ = "C" THEN 305
170 IF ((ASC(R2$)-56>0) OR
    (ASC(R2$)-49<0)) THEN 160
175 POKE 1666,ASC(R2$)
180 GET C2$ : IF C2$ = "" THEN
    180
185 IF ((ASC(C2$)-56>0) OR
    (ASC(C2$)-49<0)) THEN 180
190 POKE 1667,ASC(C2$)
195 IF J > 1 THEN 800
200 POKE 1986,15 : POKE 1987,11
    : POKE 1988,63
205 GET AN$ : IF AN$ = "" THEN
    205
210 IF AN$ <> "Y" THEN 310
215 L = 989 + 120*(ASC(R$)-48) +
    4*(ASC(C$)-48)
220 L2 = 989 + 120*(ASC(R2$)-48)
    + 4*(ASC(C2$)-48)
225 IF PEEK(L+1)<>160 THEN K=1
230 DR = ASC(R2$)-ASC(R$)
    : DC = ASC(C2$)-ASC(C$)
    : IF PEEK(L)<>SY(I) THEN 310
235 IF PEEK(L2) <> 160  THEN 310
240 IF ((ABS(DR)>2) OR
    (ABS(DR)<1)) THEN 310
245 IF ((ABS(DR) = 2) AND
    (L$<>"J")) THEN 310
250 IF ((ABS(DR) = 1) AND (L$
    ="J")) THEN 310
255 IF ABS(DC)<>ABS(DR) THEN 310
```

```
260 IF ((I=1) AND (K=0) AND
    (DR<0)) THEN 310
265 IF ((I=2) AND (K=0) AND
    (DR>0)) THEN 310
270 IF((ABS(DR)=2)AND((PEEK(
    (L+L2)/2)=SY(I)) OR
    (PEEK((L+L2)/2)=160)))THEN
    310
275 IF ((R2$="1") OR (R2$="8"))
    THEN K=1
280 POKE L, 160 : POKE L+1,160
285 FOR NK = 0 TO K
    : POKE L2+NK,SY(I) : NEXT
290 IF ABS(DR) = 2 THEN POKE
    (L+L2)/2,160 : POKE
    (L+L2)/2+1,160
    : JP(I)=JP(I)+1
292 IF JP(I) = 12 THEN 600
295 IF J < 2 THEN 305
300 GOTO 900
305 K = 0 : JF=0 : I=I+1
    : IF I = 3 THEN I = 1
310 POKE 1986,32 : POKE 1987,32
    : POKE 1988,32
315 IF JF = 1 THEN POKE 1666,160
    : GOTO 160
320 POKE 1426,32 : POKE 1427,32
    : POKE 1546,32
    : POKE 1547,32 : POKE 1666,32
325 POKE 1667,32 : POKE 1706,32
    : POKE 1707,32
    : POKE 1746,32 : POKE 1747,32
330 POKE 1786,32 : POKE 1787,32
    : POKE 1826,32
    : POKE 1827,32 : J=0
335 IF ((P = 1) AND (I=1)) THEN
    400
340 GOTO 95
400 NT = 0 : R = INT(8*RND(1)+1)
    : C = INT(8*RND(1)+1)
    : POKE 1306, SY(I)
405 L = 989 + 120*R + 4*C
    : IF PEEK(L)<>SY(I) THEN 400
410 NT = NT+1 : IF NT>10 THEN 400
415 DR = INT(3*RND(1)-1)
    : IF DR = 0 THEN 415
420 SN = INT(2*RND(1)) : DC = DR
425 IF SN = 0 THEN DC = - DC
430 L2 = 989 + 120*(R+DR) +
    4*(C+DC)
435 IF PEEK(L2)= SY((NOT I)+4)
    THEN L2=L2+120*DR+4*DC
    : DR = 2*DR : DC = 2*DC
440 IF PEEK(L2)<> 160 THEN 410
445 IF((ABS(DR)=2)AND((PEEK(
    (L+L2)/2)=SY(I)) OR
    (PEEK((L+L2)/2)=160)))THEN
    410
450 IF PEEK(L+1)<>160 THEN K=1
455 IF ((I=1) AND (K=0) AND
    (DR<0)) THEN 410
460 IF ((I=2) AND (K=0) AND
    (DR>0)) THEN 410
```

```
465 IF ((R+DR=1) OR (R+DR=8))
    THEN K=1
470 POKE L, 160 : POKE L+1,160
475 FOR NK = 0 TO K
    : POKE L2+NK,SY(I) : NEXT
480 IF ABS(DR) = 2 THEN POKE
    (L+L2)/2,160 : POKE
    (L+L2)/2+1,160
    : JP(I)=JP(I)+1
485 IF JP(I) = 12 THEN 600
490 K=0 : I=I+1 : IF I = 3 THEN
    I = 1
495 IF P = 0 THEN 400
500 GOTO 95
600 PRINT"[CLEAR]" : S=54272
    : POKE S+24,15 : POKE S+5,9
    : POKE S+6,0 : POKE 53281,0
605 FOR N = 0 TO 5 : READ H,L,D
610 POKE S,L : POKE S+1,H
    : POKE S+4,33
615 FOR T = 1 TO D : NEXT T
620 POKE S+4,32 : FOR T = 1 TO
    10 : NEXT T : NEXT N
625 FOR N=1 TO 20 : POKE
    1080+40*N,SY(I)
    : POKE 1082+40*N,23
    : POKE 1083+40*N,9
630 POKE 1084+40*N,14
    : POKE 1085+40*N,19 : NEXT N
635 END
800 FOR M = 2 TO J
805 POKE 1626 + 40*M,160
810 GET R3$(M) : IF R3$(M) = ""
    THEN 810
815 IF ((ASC(R3$(M))-56>0) OR
    (ASC(R3$(M))-49<0)) THEN 810
820 POKE 1626 + 40*M,ASC(R3$(M))
825 POKE 1627 + 40*M,160
830 GET C3$(M) : IF C3$(M) = ""
    THEN 830
835 IF ((ASC(C3$(M))-56>0) OR
    (ASC(C3$(M))-49<0)) THEN 830
840 POKE 1627 + 40*M,ASC(C3$(M))
845 NEXT M : GOTO 200
900 J = J - 1 : POKE 1427, J+48
    : JF=1
905 POKE 1546, PEEK(1666)
    : POKE 1547, PEEK(1667)
910 FOR L = 0 TO 4
    : POKE 1666+L*40,
    PEEK(1706+L*40)
915 POKE 1667+L*40,
    PEEK(1707+L*40) : NEXT
920 R$=CHR$(PEEK(1546))
    : C$=CHR$(PEEK(1547))
925 R2$=CHR$(PEEK(1666))
    : C2$=CHR$(PEEK(1667))
930 GOTO 215
1000 DATA 1109,1233,1349,1713,
     1829,1953
1010 DATA 16,195,64,21,31,64,25,
     30,64,33,135,128,25,30,64,
     33,135,128
```

Machine Code to be appended to the program

```
169  12  141  32  208  141  33  208  162  0  142  254  3  142  255  3
142  252  3  162  48  134  251  134  253  162  2  142  253  3  162  4
134  252  162  216  134  254  160  0  169  160  145  251  152  74  74  41
1  170  189  252  3  145  253  200  192  32  208  236  238  255  3  173
255  3  201  24  208  1  96  238  254  3  173  254  3  201  3  208
19  173  252  3  72  173  253  3  141  252  3  104  141  253  3  169
0  141  254  3  169  40  24  101  251  133  251  133  253  144  183  169
1  24  101  252  133  252  169  1  24  101  254  133  254  144  167  96
```

References and Footnotes

1. If you should ever want to PRINT the machine code at the end of your program, add the following sequence to your program:

```
16  OPEN 4,4,2: CMD4: J=0
17  FOR I=0 TO 127: PRINT PEEK (S1+I);: J=J+1
18  IF J>15 THEN PRINT CHR$(10);: J=0
19  NEXT: PRINT #4,: CLOSE 4: STOP
```

Assembly Language List, corresponding to above machine code

```
1300 A9 0C        LDA #$0C
1302 8D 20 D0     STA $D020
1305 8D 21 D0     STA $D021
1308 A2 00        LDX #$00
130A 8E FE 03     STX $03FE
130D 8E FF 03     STX $03FF
1310 8E FC 03     STX $03FC
1313 A2 29        LDX #$29
1315 86 FB        STX $FB
1317 86 FD        STX $FD
1319 A2 02        LDX #$02
131B 8E FD 03     STX $03FD
131E A2 04        LDX #$04
1320 86 FC        STX $FC
1322 A2 D8        LDX #$D8
1324 86 FE        STX $FE
1326 A0 00        LDY #$00
1328 A9 A0        LDA #$A0
132A 91 FB        STA ($FB),Y
132C 98           TYA
132D 4A           LSR
132E 4A           LSR
132F 29 01        AND #$01
1331 AA           TAX
1332 BD FC 03     LDA $03FC,X
1335 91 FD        STA ($FD),Y
1337 C8           INY
1338 C0 20        CPY #$20
133A D0 EC        BNE $1328
133C EE FF 03     INC $03FF
133F AD FF 03     LDA $03FF
1342 C9 18        CMP #$18
1344 D0 01        BNE $1347
1346 60           RTS
1347 EE FE 03     INC $03FE
134A AD FE 03     LDA $03FE
134D C9 03        CMP #$03
134F D0 13        BNE $1364
1351 AD FC 03     LDA $03FC
1354 48           PHA
1355 AD FD 03     LDA $03FD
1358 8D FC 03     STA $03FC
135B 68           PLA
135C 8D FD 03     STA $03FD
135F A9 00        LDA #$00
1361 8D FE 03     STA $03FE
1364 A9 28        LDA #$28
1366 18           CLC
1367 65 FB        ADC $FB
1369 85 FB        STA $FB
136B 85 FD        STA $FD
136D 90 B7        BCC $1326
136F A9 01        LDA #$01
1371 18           CLC
1372 65 FC        ADC $FC
1374 85 FC        STA $FC
1376 A9 01        LDA #$01
1378 18           CLC
1379 65 FE        ADC $FE
137B 85 FE        STA $FE
137D 90 A7        BCC $1326
137F 60           RTS
1380 00           BRK
```

C

BASIC Quiz for Would-Be Hackers

For the Commodore 64

By Gerhard Schilling

Would you like to test your friends who consider themselves true hackers? Here is a simple but tricky quiz to impress them.

The program needs no instruction prior to using it. Just type RUN. Six separate problems will be presented in sequence, each with answers and explanations.

The program contains REM instructions for the more complicated lines to be typed. Be careful in entering all spaces, quotes and semicolons precisely as given. Some of them are necessary for the program to run correctly and not just there to make the listing easier to read.

When typing the program, you can omit all lines that have a REM following the line number as well as the REM explanations—and colon—which follow a character symbol in lines 50, 100, 300, 600, 1000, 1200 and 1300. This will reduce the program length from 8822 bytes to 7184 bytes.

Table 1 shows the program structure and gives you a hint of what the separate quizzes are all about. If these hints appear mysterious at first, don't despair. Just use them to show off your knowledge of BASIC to your friends. When running the program, clear explanations will appear on the screen.

In case you are wondering about the use of certain symbols, Table 2 contains brief explanations. However, you can safely ignore them unless you find parts of the program truly puzzling.

Table 1. *Program Structure and Contents*

Lines	Subject	Contents
1-50	Preface	Lines 10-30 are reserved for later automatic printing.
52-86	QUIZ No. 1	Tests knowledge of the limitation on the use of integers.
100-290	QUIZ No. 2	Shows the limitation on the number of characters which are permitted for a variable.
300-530	QUIZ No. 3	Warns of using BASIC vocabulary as part of a string.
600-796	QUIZ No. 4	Boolean logic? No; just a simple use of AND/OR.
800-980	QUIZ No. 5	Trouble with decimal fractions.
1000-1180	QUIZ No. 6	Some fun with the use of upper/lower case and graphics characters.
1200-1240	Epilogue	Enough is enough.
1250-1296	Postscript	Program length and timing.
1299	END	
1300-1450	Verification	Test instructions for "True Hackers."

Table 2. *Special Symbols*

C$ = CHR$ (34)	Quotes used within quotes; see, for example, line 330. Needed to permit self-printing via Section 1300-1450.
TI$ = "000000"	Sets the clock to zero. Used to compute time elapsed in lines 1260-1272.
Y$	If "YES" then instructions will appear for verification.
CHR$ (14)	Switch to lower case. Used in QUIZ No. 6.
CHR$ (142)	Switch to upper case. Used in QUIZ No. 6.
T	Counter for time delay. Used in QUIZ No. 6.

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Note that lines 1250-1296 contain a goodie which you may be able to use in programs of your own.

If after taking this quiz you don't believe the answers, there is a special verification section: Lines 1300-1450. By following the instructions after RUN 1300, the individual quizzes will print themselves in the preface section as regular lines 10-30.

There are other routines and tricks of BASIC programming used throughout that you may find new and challenging. Perhaps they will be useful in your own programming.

Have fun.

Basic Quiz

```
1 REM [DR. SCHILLING   4/10/84]
2 REM: BASIC QUIZZ FOR WOULD-BE
  HACKERS
3 C$ = CHR$ (34)
4 TI$ = "000000"
5 Y$ = ""
6 REM [TO RUN THE QUIZZ,
   JUST 'RUN']
7 REM [TO EXAMINE PROBLEMS,
   'RUN 1300']
8 GO TO 50
9 REM (LINES 10 - 30 ARE
  RESERVED)
49 STOP
50 PRINT"[CLEAR]"
52 PRINT" I AM YOUR
   USER-FRIENDLY COMMODORE-64"
54 PRINT
56 PRINT"[SPACE7]BASIC QUIZZ NO.
   1"
58 PRINT
60 PRINT"MY FIRST PROGRAM IS:"
   :PRINT
62 PRINT"[SPACE2]10 A% = 33000 "
64 PRINT"[SPACE2]11 PRINT A% "
66 PRINT:PRINT"BUT WHEN YOU RUN
   IT, I WILL TELL YOU:"
68 PRINT
70 PRINT" ?ILLEGAL QUANTITY
   ERROR IN 10"
71 IF Y$ <> "YES" THEN 74
72 PRINT" (ENTER PROGRAM LINES
   WITH CURSOR, THEN RUN '10' TO
   VERIFY)":STOP
74 PRINT:PRINT"DO YOU WANT TO
   KNOW WHY?"
76 INPUT"(PRESS RETURN KEY)"; K$
78 PRINT"[UP,SHFT *33]"
80 PRINT:PRINT"I CAN'T HANDLE
   INTEGERS LARGER"
82 PRINT"[SPACE2]THAN 32767
   [SPACE2]-[SPACE2]THAT'S WHY."
84 PRINT
86 INPUT" (PRESS RETURN KEY TO
   CONTINUE)"; K$
100 PRINT"[CLEAR,DOWN]"
102 PRINT"[SPACE7]BASIC QUIZZ
    NO. 2"
104 PRINT
110 PRINT"MY NEXT PROGRAM IS:"
    :PRINT
120 PRINT"[SPACE2]12 DIM F (10) ,
     G (20)"
130 PRINT"[SPACE2]13 DIM F1 %
    (11)"
140 PRINT"[SPACE2]14 DIM F3 (1,2,
    3,4,5,6)"
150 PRINT"[SPACE2]15 DIM FF1 (5)"
160 PRINT"[SPACE2]16 DIM FF2
    (55)"
170 PRINT
180 PRINT "HERE IS THE PROBLEM:"
190 PRINT"[SPACE2]IF YOU TYPE
    'RUN 12'[SPACE2]
    I WILL GIVE YOU[SPACE2]
    THE MESSAGE:"
200 PRINT"[SPACE2]?REDIM'D ARRAY
    ERROR IN 16"
202 IF Y$ <> "YES" THEN 210
205 PRINT" (ENTER PROGRAM LINES
    WITH CURSOR, THEN RUN '12'
    TO VERIFY)":STOP
210 PRINT:PRINT"WHY?[SPACE2]
    WHAT'S WRONG?"
220 INPUT"(PRESS RETURN KEY FOR
    ANSWER)"; K$
230 PRINT"[UP,SHFT *38]"
234 PRINT
240 PRINT"SORRY, BUT I CAN READ
    ONLY THE FIRST TWO
    CHARACTERS OF ANY VARIABLE."
250 PRINT"[SPACE2]FF1 AND FF2
    ARE THE SAME TO ME!"
260 PRINT"(AND YOU MUST NOT
    DIMENSION A VARIABLE[SPACE2]
    MORE THAN ONCE)."
280 PRINT
290 INPUT" (PRESS RETURN KEY TO
    GO ON)"; K$
300 PRINT"[CLEAR,DOWN]"
302 PRINT"[SPACE7]BASIC QUIZZ
    NO. 3"
304 PRINT
310 PRINT"MY NEXT PROGRAM IS:"
    :PRINT
320 PRINT 17 " CLYDE = 999
    : PRINT CLYDE"
330 PRINT 18 " GER $ = " C$
    "GERRY" C$ " : PRINT GER $"
340 PRINT 19 " LOR $ = " C$
    "LORNA" C$ " : PRINT LOR $"
350 PRINT
```

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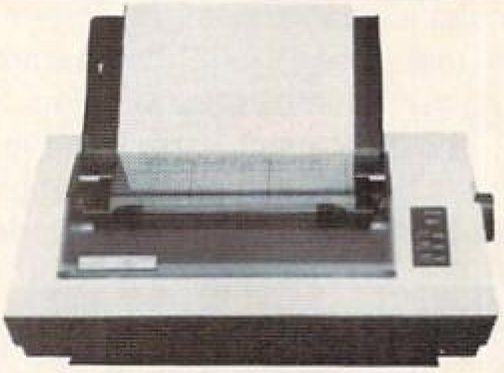
```
360 PRINT "HERE IS THE PROBLEM:"
370 PRINT"[SPACE2]IF YOU TYPE
    'RUN 17'[SPACE2]I WILL PRINT
    :"
380 PRINT
400 CLYDE = 999 : PRINT CLYDE
410 GER $ = "GERRY" : PRINT GER $
430 PRINT"?SYNTAX ERROR IN 19"
440 PRINT
450 PRINT "[SPACE2]W H Y[SPACE2]
    ??[SPACE2]WHAT'S WRONG?"
460 PRINT
462 IF Y$ <> "YES" THEN 470
465 PRINT" (ENTER PROGRAM LINES
    WITH CURSOR, THEN RUN '17'
    TO VERIFY)":STOP
470 INPUT" (PRESS RETURN KEY TO
    GO ON)"; K$
482 PRINT"[UP,SHFT *38]"
490 PRINT
500 PRINT"LOR $ CONTAINS THE
    BASIC KEYWORD 'OR'!"
510 PRINT"[SPACE2]THE SAME THING
    WOULD HAPPEN, IF YOU[SPACE5]
    USED, FOR EXAMPLE,"
520 PRINT"[SPACE2]'LAND' INSTEAD
    OF 'CLYDE' IN LINE 17."
530 INPUT" (PRESS RETURN KEY TO
    GO ON)"; K$
600 PRINT"[CLEAR,DOWN]"
602 PRINT "[SPACE7]
    BASIC QUIZZ NO. 4"
610 PRINT "MY NEXT PROGRAM IS:"
612 PRINT
630 PRINT"20 INPUT"  C$ "YES OR
    NO" C$"; Y$
640 PRINT"21 IF Y$ <> " C$ "YES"
    C$ " OR Y$ <> " C$ "NO" C$ "
    THEN 20"
650 PRINT"22 IF Y$ <> " C$ "YES"
    C$ " AND Y$ <> " C$ "NO" C$
    "THEN 20"
660 PRINT"23 IF Y$ = " C$ "YES"
    C$ " OR[SPACE2]
    Y$ = " C$ "NO" C$ " THEN 20"
670 PRINT"24 IF Y$ = " C$ "YES"
    C$ " AND Y$ = " C$ "NO" C$ "
    THEN 20"
680 PRINT
700 PRINT "HERE IS THE PROBLEM:"
710 PRINT:PRINT "YOU WANT TO
    MAKE SURE THAT NOTHING BUT"
712 PRINT"[SPACE2]EITHER 'YES'
    OR 'NO' IS ENTERED"
714 PRINT"[SPACE2]AS 'Y$' IN
    LINE 20."
716 PRINT"IF NOT, ASK FOR INPUT
    AGAIN."
718 PRINT
720 PRINT" WHICH IS CORRECT,
     LINE 21, OR LINE 22,
     OR LINE 23, OR LINE 24?"
740 PRINT
```

```
742 IF Y$ <> "YES" THEN 750
745 PRINT" (ENTER WITH CURSOR,
    BUT DO NOT RUN '20'. IT WILL
    HANG-UP !)"
747 PRINT" (ONLY LINES 20 AND 22
    WILL WORK TOGETHER)" : STOP
750 INPUT "READY FOR THE ANSWER?
    [SPACE2](PRESS RETURN KEY)";
     K$
762 PRINT"[UP,SHFT *38]"
770 PRINT"[SPACE2]O N L Y[SPACE3]
    LINE[SPACE2]22 IS CORRECT!:"
772 PRINT
780 PRINT"WARNING: IF YOU TRY
    OTHERS, WATCH OUT;"
790 PRINT" I MAY HANG UP YOUR
    PROGRAM WITH SOME"
792 PRINT" OF THE OTHER LINES..."
796 INPUT" (PRESS RETURN KEY TO
    GO ON)"; K$
800 PRINT"[CLEAR]"
810 PRINT"[SPACE7]BASIC QUIZZ
    NO. 5"
820 PRINT"MY NEXT PROGRAM IS:"
822 PRINT
824 PRINT"[SPACE2]25 X = SQR(100)
    : Y = 10"
826 PRINT"[SPACE2]26 PRINT " C$
    "X=" C$ "X " C$ "[SPACE2]
    Y=" C$ "Y " C$ "[SPACE2]
    X-Y=" C$ "X - Y"
828 PRINT"[SPACE2]27 IF X <> Y
    THEN PRINT " ;
    : PRINT C$ " WRONG !"
830 PRINT
832 PRINT"IF I 'RUN',
     I PRINT AS FOLLOWS:"
842 X = SQR(100): Y = 10
844 PRINT"[SPACE2]X=" X"[SPACE3]
    Y=" Y"[SPACE3]X-Y="X-Y
846 IF X <> Y THEN PRINT "
    [SPACE2]WRONG !"
848 PRINT
850 PRINT"I FIND INDEED THAT THE
    SQARE-ROOT OF 100 IS [RVS]
    NOT[RVOFF] EQUAL TO 10 !"
860 PRINT
862 IF Y$ <> "YES" THEN 870
865 PRINT" (ENTER PROGRAM LINES
    WITH CURSOR, THEN RUN '25'
    TO VERIFY)":STOP
870 PRINT"DO YOU WANT TO KNOW
    WHY NOT?"
880 INPUT"(PRESS RETURN KEY)";K$
892 PRINT"[UP,SHFT *29]"
900 PRINT"BECAUSE WHILE I PRINT
    : X=" X
910 PRINT"[SPACE18]AND: Y=" Y
920 PRINT:PRINT"I CALCULATED
    THAT THERE IS A DIFFERENCE
    BETWEEN X AND Y OF"X-Y
940 PRINT
950 PRINT"[SPACE2]IT IS ONLY
```

```
    .000000037252903[SPACE2]
    BUT....."
960 PRINT"[SPACE2]I HAVE TROUBLE
    WITH CERTAIN DECIMAL[SPACE5]
    FRACTIONS (SUCH AS .33333)"
970 PRINT
980 INPUT" (PRESS RETURN KEY TO
    GO ON)"; K$
1000 PRINT"[CLEAR,DOWN]"
1002 PRINT"[SPACE7]
     BASIC QUIZZ NO. 6"
1004 PRINT
1005 C$=CHR$(34)
1010 PRINT"MY NEXT PROGRAM IS:"
     :PRINT
1020 PRINT 29 "PRINT CHR$ (14)"
1030 PRINT" 30 PRINT";
     :PRINT C$"[SHFT T,SHFT H,
     SHFT E] [SHFT Q,SHFT U,
     SHFT I,SHFT C,SHFT K]
     [SHFT B,SHFT R,SHFT O,
     SHFT W,SHFT N] [SHFT F,
     SHFT O,SHFT X] [SHFT J,
     SHFT U,SHFT M,SHFT P,SHFT E,
     SHFT D] [SHFT O,SHFT V,
     SHFT E,SHFT R] [SHFT T,
     SHFT H,SHFT E] [SHFT L,
     SHFT A,SHFT Z,SHFT Y]
     [SHFT D,SHFT O,SHFT G]."
1040 PRINT
1050 PRINT "HERE IS THE PROBLEM:"
1052 PRINT "[SPACE5]
     WHAT DOES IT MEAN,"
1054 PRINT " AND HOW DID I DO
     THAT?"
1056 IF Y$ <> "YES" THEN 1058
1057 PRINT" (ENTER PROGRAM LINES
     WITH CURSOR, THEN RUN '29'
     TO VERIFY)":STOP
1058 PRINT
1060 PRINT" (PRESS ANY KEY TO GO
     ON)"
1062 GET K$: IF K$ = "" THEN 1062
1070 PRINT"[UP,SPACE21,DOWN]"
1080 PRINT"[UP,SPACE25,DOWN]"
1082 PRINT"[UP,SPACE25,DOWN]"
1084 PRINT"[UP,SPACE25,DOWN]"
1086 PRINT"[UP,SPACE25,DOWN]"
1090 PRINT"[UP6]";
1100 PRINT CHR$ (14)
1110 PRINT
1120 PRINT" [SHFT N,SHFT O,
     SHFT W] [SHFT C,SHFT A,
     SHFT N] [SHFT Y,SHFT O,
     SHFT U] [SHFT R,SHFT E,
     SHFT A,SHFT D] [SHFT L,
     SHFT I,SHFT N,SHFT E] 30 ?"
1130 PRINT
1140 PRINT" ([SHFT P,SHFT R,
     SHFT E,SHFT S] [SHFT A,
     SHFT N,SHFT Y] [SHFT K,
     SHFT E,SHFT Y] [SHFT T,
     SHFT O] [SHFT G,SHFT O]
     [SHFT O,SHFT N])"
1142 GET K$: IF K$ = "" THEN 1142
1144 PRINT"[UP,SHFT *38]"
1146 PRINT CHR$ (142)
1150 PRINT" WELL, IT'S REALLY
     SIMPLE:"
1160 PRINT"I JUST TYPED SHIFTED
     LETTERS;"
1162 PRINT"AND THEY CAME OUT AS
     SYMBOLS."
1164 PRINT" IF YOU REALLY WANT
     TO CONFUSE YOURSELF"
1166 PRINT" STUDY PAGE 74 OF THE
     C-64 PROGRAMMER'S[SPACE2]
     REFERENCE GUIDE. HAVE FUN!"
1170 PRINT
1172 FOR T = 0 TO 2000 : NEXT T
1173 PRINT CHR$ (14)
1174 FOR T = 0 TO 1000 : NEXT T
1175 PRINT CHR$ (142)
1177 PRINT"[UP3]"
1180 INPUT" (PRESS RETURN KEY TO
     CONTINUE)"; K$
1200 PRINT"[CLEAR]"
1220 PRINT"[SPACE2]
     I AM GETTING TOO FANCY;"
1222 PRINT"[SPACE2]
     ENOUGH OF THIS STUFF."
1226 PRINT"[SHFT *39]
1240 CLR
1250 PRINT"THE PROGRAM LENGTH WAS
     :" ; 38909 - ( FRE(1) - (
     FRE(1) <0 ) * 65536 )
1252 PRINT"[SPACE2]
     FREE BYTES REMAINING
     :" ; FRE(1) - ( FRE(1) <0 )
     * 65536
1255 PRINT
1260 J1 = TI/216000
     : J2 = ( J1-INT(J1) ) * 60
     : J3 = ( J2-INT(J2)   * 60
1262 JX = J3 : J3 = INT( JX + .5
     )
1264 PRINT"[SPACE2]
     SINCE YOU STARTED THIS
     QUIZZ,"
1266 PRINT"THE FOLLOWING TIME
     HAS ELAPSED:"
1270 PRINT
1272 PRINT  INT(J1) "HOURS
     "INT(J2)"MINUTES"
     (J3)"SECONDS"
1274 PRINT"[SHFT *39]"
1280 PRINT"PS.:[SPACE2]
     DO YOU WANT TO EXAMINE
     WHETHER I[SPACE8]
     HAVE SPOKEN TRUE ?"
1282 INPUT"YES OR NO";Y$
1284 IF Y$ <> "YES" AND Y$ <>
     "NO" THEN PRINT "TRY AGAIN"
     : GO TO 1282
1286 IF Y$ = "YES" THEN 1300
1290 PRINT"[SPACE3,SHFT S,SPACE8,
      SHFT S,SPACE4]END[SPACE3,
      SHFT S,SPACE9,SHFT S]"
 1292 PRINT"[SPACE12,SHFT S,
      SPACE4]73,[SPACE3,SHFT S]"
 1294 PRINT
 1296 PRINT"[SPACE2]AU REVOIR
      [SPACE2]FROM YOUR FRIENDLY
      C-64."
 1299 END
 1300 PRINT"[CLEAR]"
 1310 PRINT"INSTRUCTIONS FOR TRUE
      HACKERS:"
 1320 PRINT
 1330 PRINT"WHENEVER A 'BREAK'
      OCCURS,"
 1340 PRINT
 1350 PRINT"1. GO UP WITH CURSOR
      TO THE TOPMOST"
 1352 PRINT"NUMBERED PROGRAM LINE"
 1354 PRINT"2. HIT RETURN KEY FOR
      EACH NUMBERED"
 1356 PRINT"PROGRAM LINE"
 1358 PRINT"3. IMPORTANT
      : DO NOT HIT RETURN KEY ANY
      FURTHER !"
 1360 PRINT"4. MOVE CURSOR DOWN
      BELOW 'READY.'"
 1362 PRINT
 1364 PRINT"THE NUMBERED QUIZ
      LINES ARE NOW"
 1366 PRINT"ENTERED BETWEEN LINES
      10 AND 30 AS PART"
 1368 PRINT"OF THE MAIN PROGRAM."
 1372 PRINT"(LATER, 'LIST-30' AND
      SEE.)2
 1374 PRINT" NOW: 'RUN 10' OR 12
      OR 17 OR 25 OR 29,
       AS INDICATED ON THE
      SCREEN."
 1380 PRINT"['RUN 20' WILL
      HANG-UP, OF COURSE ![]]"
 1382 PRINT
 1384 PRINT"REMEMBER,
       TO ENTER THE PROBLEMS THIS
      WAY JUST[SPACE2]'RUN 1300'."
 1386 PRINT
 1400 C$ = CHR$ (34) : Y$ = "YES
 1410 PRINT"O.K.[SPACE2]
      WHICH QUIZZ DO YOU WANT TO
      CHECK:"
 1420 INPUT"QUIZZ NUMBER (BETWEEN
      1 AND 6)";N%
 1440 ON N% GOTO 54,100,300,600,
      800,1000,1450
 1450 GOTO 1290
```

C

A Printer For All Reasons!



The GP-550-CD is an extra high quality graphic printer that offers both standard dot matrix printing and near letter quality printing all in a single unit.

PRINTING MODE	DOT MATRIX (H x V) & SPACES	NUMBER OF COLUMNS	PRINT SPEED (CPS)	CHARACTER SPACING (CPI)	PASS
DP Mode:					
Pica	9 x 8 + 3	80	50	10	1
Elite	9 x 8 + 1	96	60	12	1
Condensed	5 x 8 + 2	136	86	17	1
NLQ Mode:	NOTE: There is expanded (double-width) printing function in every character mode.				
Pica	9 x 16 + 3	80	25	10	2
Elite	9 x 16 + 1	96	30	12	2
Proportional	N x 16	—	—	—	2
Super/Subscript	5 x 8	136	43	17	2
Italic Cursive	12 x 16	80	25	10	2

Line Spacing	6, 8, 7½, 12, or N/120 (N = 0-99) lines per inch.
Paper Feed	Pin-feed and friction-feed (single sheet)
Paper Width	Adjustable from 4.5 to 10 inches (fanfold paper)
Paper Type	Fanfold or cutsheet paper
Ribbon	Single color, special self-inking cassette
Dimensions	12" (D) x 16.5" *(W) x 4.5"* (H) (including paper separator)
Printing Method	Two-hammer
Printing Format	9 x 8 (DP); 9 x 16 (NLQ)
Character Kinds	96 ASCII + 44 characters and symbols
Graphics	Arbitrary combination of 8 dots or 16 dots.
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The Unknown Super Expander KEY Function

By Mike Hinshaw

The *Super Expander* is one of the most useful cartridges for the VIC 20. In addition to adding 3K of expansion RAM, it adds 18 new BASIC commands for high-resolution graphics and writing music. The CIRCLE function is handy for drawing arcs and circles rather than having to figure a formula and then POKE in the values. PAINT allows you to color a small area of the screen differently than the rest. The COLOR command sets the screen, border and character colors without POKEs. The most useful command is DRAW, which draws lines between specified points. The SOUND command sets the volume and voices without a single POKE, and all at one time. Other functions include joystick, paddle and lightpen commands.

When I first purchased my *Super Expander,* I enjoyed the graphics commands. But the extra commands are limited to use with the cartridge plugged in. When you plug in the 8K or 16K expander, you disable the 3K. I soon started looking for other ways to use the cartridge.

One function that I find particularly useful is the KEY command. The KEY function is a handy programming aid when you type in programs that use *Super Expander* commands. The function keys are defined to key in some of the commands as strings. When the *Super Expander* is in place, the function keys are initially defined as:

f1=GRAPHIC
f2=COLOR
f3=DRAW
f4=SOUND
f5=CIRCLE
f6=POINT
f7=PAINT
f8=LIST+CHR$(13)

For example, when you want to type in the CIRCLE function, you press the f5 key and the word "CIRCLE" appears on the screen in your program line.

You can easily redefine the keys. Type in KEY in direct mode and the screen shows a list of the

(Continued On Page 95)

VIC
commodore

Appointment Calendar

For Commodore 64 and VIC 20

By Dennis Bloomfield

Given the month and a starting date, this program will produce a one-week daily appointment schedule that divides each day into ½ hour segments from 8:00 a.m. to 8:00 p.m.

You may use the entire month name or just the first three letters. (The program will only print the first three letters of the month no matter which you choose.) The calendar always prints the week from Sunday to the following Saturday, so be sure that the date you input is for a Sunday. The starting date must be in the range one to 31. Please note: the month name and starting date must be separated by a comma.

You do not have to be concerned if there is a change of month in the middle of the week, as the program will make this change automatically. If the month chosen is February, the program will ask you if it is leap year and answering yes or no will set the month length to 29 or 28 respectively.

Prior to printing, you will be asked to check the paper and printer alignment (the only way you can start printing is by answering "Y" to the screen prompt). After printing, you will be asked if you want to print again. Answer "N" and the program ends, while an answer of "Y" will provide you with the options of printing with the same dates, printing with different dates or ending (in case you change your mind).

Using Strings

I wrote this program to acquire experience in string manipulation and to practice printing forms with my 1525 printer. I learned to utilize string variables in several ways while writing this program and I hope that you can benefit from studying the program code. String manipulation commands are some of the most powerful tools available to the BASIC programmer. Although at first they may seem confusing, after you work with them, you find that they are quite easy to use. The only way to really understand any BASIC command is to experiment with it.

Here is a list of variables and how they are used in this program:

String Usage	
A$ to M$	Graphic characters for printing the form.
M0$	Month input.
M1$	Used to check if the month input is February.
M2$	All months with 30 days.
M3$	All months with 31 days.
M4$	All the months of the year plus the first month of the new year. Used for month change and spelling checker.
R$	Repeat input prompt.
SC$	Screen clear and down cursors for screen formatting.
CH$	The left three characters of the month input.
M5$	Working string for the calendar header. If the month changes in the middle of the week, then M5$ = the new month, otherwise it is the same as CH$. This should make clear why the extra Jan is needed in M4$. If the week being printed is the last week of December and the month changes, then M5$ = Jan.
HR$	Current header to print.
N$	GET statement response.
Other Program Variables	
SD	Starting date.
ML	Month length.
ED	Ending date.
FL	Flag the end of calendar.
X	Main program counter.
S,R	Secondary counters.
DE	Delay counter.
LY	Leap year variable

(Continued On Page 95)

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The Computer Jukebox

For the VIC 20

By Donald J. Eddington

I found a computer program on cassette that would play several songs. So I bought a copy and after playing with it and making some changes, I found that it had two limitations: first, it only used one voice for the melody and could not play two voices together; and second, it could only play the songs in sequence. If the user liked the fourth song best, he had to listen to songs one through three first.

Making the VIC 20 play two-voice songs was just a matter of adding a second voice variable and extra data statements. Then, at least, it sounded like music! But the program *still* played all the songs in sequence only.

Surmounting the sequence-only limitation was the real challenge. I could not read the notes from the data statements, because data is read from first to last (in sequence), the very problem I was trying to avoid!

I had to stop and think, "Now, how can I play music without using any data statements?" After some thought, I had two ideas: put the tunes into an array, note by note, and reference them as large blocks to play the whole tune; or convert notes to letters (by a system like this: A=219 B=223; C=225; etc.) then write the tunes as strings of letters.

Method one—reference tunes from an array—played very well, but I could only fit seven tunes. Then, I hit the ?OUT OF MEMORY statement. I knew that arrays were heavy on byte usage, so I put this method aside for possible later use (if I could find no other shorter method) and tried method two.

Method two—write the tunes as letter strings—had several problems. First, how to read notes out of the strings; second, how to keep the two parts from getting out of synchronization. Then, how would I control note values in the strings? It seemed like a good idea—and a novel one too—but fraught with difficulties. It worked with one tune, but with two notes, they got out of synchronization and as I suspected, the rhythm was destroyed. String manipulation did not seem to be the way to write my Computer Jukebox! Maybe I should settle for the array method.

"But no," an inner voice said. "Musical string manipulation is possible, with one letter in a string as a block chord!" Then, the clincher came to me, "Use the screen as a device to read from—using PEEK values!" All the ideas clicked and the Computer Jukebox was in the making.

When I worked out a method of writing note strings which play three note block chords, I solved the out-of-step problem. When I worked out a way to use the screen as a device to read using PEEKs, I solved the read problem. I also bypassed the byte's costly array. Hooray, a Jukebox!

A title is associated with a number (0 to 11) and two tune strings. When a number is entered and RETURN pressed, the title is printed on the screen, then the tune strings are printed (invisibly). The PEEK counter is set to initial value of 7724. The program finds the line which matches the PEEK value located at the screen position (P) and sets the three note values (X, Y, and Z). Then, these three notes are POKEd into the proper voices and the process repeated with the next screen position (P+1). When PEEK(P)46 (a period), the tune ends and the program asks for another selection.

Note: If you want to program this just like a jukebox, decide the order of the tunes you want to hear, then input the numbers like this (up to ten characters). Follow each entry with the RETURN key : 1 RETURN 9 RETURN 5 RETURN 10 RETURN. This will play tunes one, nine, five and ten in that order! When tune ten ends, the program will ask for more selections.

Line-By-Line Trace

10. REM title and author of program
12. The original colors of screen and border
14. Printed at top of screen
15. A three second wait

20. to 38. A list of tunes the program plays

40. to 59. The tune strings

65. Prompt for input

67. Input tune selections

68. Reject any negative numbers

69. to 92. Print title of selected tune at the top of the screen, then print tune strings invisibly.

93. END/ESCAPE from program

95. No such tune on list—play mystery tune!

100. PEEK counter

102. Volume control for voices

105. PEEK variable, note constant, voice constant

107. Random number generator for flashing colors

108. Change color of border every time the program loops

110. to 195. PEEK Value (letter) at position on screen determined in line 105, sets three note values to be POKEd in line 205.

200. Turn off all voices if PEEK finds a period, then go back to input another song.

205. POKE notes into proper voices, then wait a little.

210. Loop back to line 100 to play another chord of music.

This program turns your VIC 20 into a jukebox. Play your favorite tune—or up to five tunes—in your selected order!

Computer Jukebox

```
57 J$="AABCRCCBCDDUCRCBRBBABCCCAABCRC
   CBCDDDFFFFRFMFMDDBLLLLRCMEMFRFMMMM
   RCMEMFRFMMMR"
58 J1$="AABCRCCBCDDDCRCBRBBABCCCAABCR
   CCBCDDDFFFFFFRRFMFMDDBLLLL."
59 K$="MMMFMMDDCCDDMMMRBBCCDDDRCCDDMM
   MRMMMFMMDDCCDDMMMRBBBREEERCCLLLLLLR"
65 PRINT"[DOWN]TYPE THE NUMBER OF
   THETUNE YOU WANT TO HEAR. 99=END"
67 INPUT X$:X=VAL(X$)
```

(Continued On Next Page)

Jukebox *(Continued)*

```
68 IF X<0 THEN 67
69 IF X=0 THEN PRINT"[CLEAR,DOWN,
   RIGHT3]JUST SCALES!!"
   :PRINT"[WHITE]LAPBCCDDEMFFGGHRHHNN
   FFEMDDCCPBLL."
70 IF X=1 THEN PRINT"[CLEAR,DOWN,
   RIGHT]OH WHEN THE SAINTS"
   :PRINT"[WHITE]"A$;A1$
73 IF X=2 THEN PRINT"[CLEAR,DOWN,
   RIGHT]MICHAEL,ROW THE BOAT"
   :PRINT"[WHITE]"B$;B$+"."
76 IF X=3 THEN PRINT"[CLEAR,DOWN,
   RIGHT3]JOY TO THE WORLD"
   :PRINT"[WHITE]"C$;C1$
79 IF X=4 THEN PRINT"[CLEAR,DOWN,
   RIGHT3]THREE BLIND MICE"
   :PRINT"[WHITE]"D$;D1$.
81 IF X=5 THEN PRINT"[CLEAR,DOWN,
   RIGHT2]GO TELL AUNT RHODIE"
   :PRINT"[WHITE]"E$;E$+"."
83 IF X=6 THEN PRINT"[CLEAR,DOWN,
   RIGHT3]THE MARINES HYMN"
   :PRINT"[WHITE]"F$;F$;F1$;F$+"."
85 IF X=7 THEN PRINT"[CLEAR,DOWN,
   RIGHT4]CAMPTOWN RACES"
   :PRINT"[WHITE]"G$;G1$
87 IF X=8 THEN PRINT"[CLEAR,DOWN]
   MERRILY WE ROLL ALONG"
   :PRINT"[WHITE]"H$;H$+"."
89 IF X=9 THEN PRINT"[CLEAR,DOWN,
   RIGHT]TWINKLE LITTLE STAR"
   :PRINT"[WHITE]"I$;I$;I1$;I1$;I$+"."
91 IF X=10 THEN PRINT"[CLEAR,DOWN,
   RIGHT]A JOLLY GOOD FELLOW"
   :PRINT"[WHITE]"J$;J1$
92 IF X=11 THEN PRINT"[CLEAR,DOWN,
   RIGHT4]LONDON BRIDGE"
   :PRINT"[WHITE]"K$;K$+"."
93 IF X=99 THEN END
95 IF X>11 THEN PRINT"[CLEAR,DOWN,
   RIGHT]THE MYSTERY TUNE!!"
   :PRINT"[WHITE]ERMEFMDCPRBRERCRLLLR
   MMEEMMDMDCPBLLLL."
10 REM THE COMPUTER JUKEBOX BY
   D.J.EDDINGTON
12 C=36879:POKE C,27
14 PRINT"[BLUE,CLEAR,DOWN]
   THE COMPUTER JUKEBOX!!MAKE YOUR
   SELECTIONS!!"
15 FOR T=1 TO 3000:NEXT
20 PRINT"TUNES TO SELECT FROM"
23 PRINT"[DOWN]0=JUST SCALES!!"
25 PRINT"1=OH WHEN THE SAINTS"
27 PRINT"2=MICHAEL,ROW THE BOAT"
29 PRINT"[UP]3=JOY TO THE WORLD"
31 PRINT"4=THREE BLIND MICE"
32 PRINT"5=GO TELL AUNT RHODIE"
33 PRINT"6=THE MARINES HYMN"
34 PRINT"7=CAMPTOWN RACES"
35 PRINT"8=MERRILY WE ROLL"
36 PRINT"9=TWINKLE LITTLE STAR"
37 PRINT"10=JOLLY GOOD FELLOW"
38 PRINT"11=LONDON BRIDGE"
40 A$="AACCDDMMMMEEEEMMAACCDDMMMMEEEE
   MMAACCDDMMMRCCCRQQQRSSSRBBBBPPPPBB"
41 A1$="CRCRBRAAAAARARCCCRMRMRMRDDDDD
   DVVVRCRVRMMMRCCCRQQQRBBBRLLLLLLL."
42 B$="AACCMMMCMFFFMMMRCCMMFFFFFFFFMM
   MRCCMRIIICDCCCPPPPAABBCCCCPPBBLLLR"
44 C$="HHHHGGGFMMMMMMDDCCCCPPBBLLLLLL
   MMFFFFFRFFGGGGGRGGHHHHHHHHHHHHHRHR
   HHGGFFMREEEUCC"
45 C1$="HRHHGGFFMREEEUCRCRCRCRCRCDMMM
   MMMUCBRBRBRBCDDDDUUCBAAHHHHFFMMMUC
   CDDCCCCPPBBLLLL."
46 D$="CCCBBBLLLLLRCCCBBBLLLLLRMMMDRD
   CCCCCRMMRURUCCCCCRMHRHGFGHREMREHRHG
   FGHREMFE"
47 D1$="HRHGFGHMEMMDCCCBBBLLLLLLRRRRMM
   FFFFFFGGGGGGOOOOOOOOOOOO."
48 E$="CCCRCCBBLLLRLLLRBBBRBBUUCCBBLL
   LRMMMRMMDDCCCRCCAABBAABBCCLLLLLRRR"
50 F$="ACMRMRERERMMMHMMCDERERUBBBLLLL
   LR"
51 F1$="HNFFDDFFDDMMMFMMHNFFDDFHHHMMM
   MER"
52 G$="EEMRMRCCMMFFMMCCCRCCBBPPBRCCBB
   PBEEMRMRCCMMFFMMCCCCBBPBCCPBLLLLLL
   RR"
53 G1$="AARACMMMHHHHHHHRFFRFHFFFMMMME
   ECDMRMRCCMMFRMRCCCRPPDUCCPBLLLLL."
54 H$="CCCBAABBCRCRCCCRBRBRBBBRCCEEMM
   MRCCCBAABBCRCRCRCCPPBBCCBBAAAALLLR"
55 I$="ARARMRMRFRFRMMMRDRURCRCRPRBRLL
   LR"
56 I1$="MRMRDRDRCRCRPPBR"
100 S=S+1
102 POKE 36878,12
105 P=7723+S:K=200:L=36874
107 C=INT(RND(1)*8)+24
108 POKE 36879,C
110 IF PEEK(P)=1 THEN X=27:Y=19:Z=31
115 IF PEEK(P)=12 THEN X=27:Y=19:Z=37
117 IF PEEK(P)=17 THEN X=29:Y=19:Z=33
120 IF PEEK(P)=2 THEN X=28:Y=23:Z=36
125 IF PEEK(P)=16 THEN X=28:Y=23:Z=34
130 IF PEEK(P)=3 THEN X=31:Y=27:Z=37
135 IF PEEK(P)=19 THEN X=29:Y=27:Z=37
140 IF PEEK(P)=4 THEN X=33:Y=28:Z=37
145 IF PEEK(P)=21 THEN X=31:Y=28:Z=36
147 IF PEEK(P)=22 THEN X=32:Y=28:Z=39
150 IF PEEK(P)=5 THEN X=36:Y=31:Z=39
155 IF PEEK(P)=13 THEN X=37:Y=31:Z=41
160 IF PEEK(P)=6 THEN X=37:Y=33:Z=28
170 IF PEEK(P)=7 THEN X=39:Y=36:Z=43
180 IF PEEK(P)=8 THEN X=41:Y=37:Z=43
185 IF PEEK(P)=15 THEN X=37:Y=37:Z=37
187 IF PEEK(P)=14 THEN X=41:Y=36:Z=43
190 IF PEEK(P)=9 THEN X=36:Y=31:Z=41
195 IF PEEK(P)=18 THEN X=-77:Y=-77
    :Z=-77
200 IF PEEK(P)=46 THEN POKE L,0
    :POKE L+1,0 :POKE L+2,0:RUN
205 POKE L+1,X+K:POKE L+2,Y+K
    :POKE L,Z+K:FOR T=1 TO 5:NEXT
210 GOTO 100
```

C

Super Expander *(Continued From Page 90)*

function key values. You can change these values onscreen just as you edit program lines. You can construct any one-key commands you want, including cursor controls.

For non-*Super Expander* programs, all of the default KEY values except the LIST (f8) are useless. When I am programming or editing, I usually define the keys like this:

f1="[clr]"   f2=" "
f3="[lft]"   f4=" "
f5="[up]"   f6=RUN+CHR$(13)
f7=LIST   f8=LIST+CHR$(13)

I define the keys I don't want to use as null strings to prevent errors. I tend to hold down the shift key when I reach for the key I want. It is good policy tokeep the key values of any keys that you don't use as null sets to prevent problems. You need to add CHR$(13) so the computer will execute a command as if you typed the word and then hit the return key. Any BASIC word plus CHR$(13) executes immediately. I find the cursor commands easier to use with a separate key for each direction.

When I LOAD and SAVE a large number of programs all at one time, I use a different set of commands. Mostly I use SAVE and LOAD, but I also frequently use LIST, RUN and NEW. Another thing that I like to do is check the ST variable. The ST variable is the way the machine keeps track of LOAD, SAVE and VERIFY errors. I use ? for print so I don't have to type more than is needed. I define the function keys like this:

f1="[clr]"   f4=NEW+CHR$(13)
f3="[up]"   f6=SAVE+CHR$(34)
f4=LOAD+CHR$(13)   +CHR$(13)
f7=RUN+CHR$(13)   f8=LIST+CHR$(13)
f2=?ST+CHR$(13)

Because you cannot use quote marks in strings, you must add CHR$(34) to get quote marks. I add a space before the SAVE statement so you can just move the cursor up to the "FOUND" line on the screen and press f6. Any string of up to 128 characters is usable in a KEY statement.

I use the cartridge even when I don't need the extra memory and I use its KEY function in several other ways. Some of them are using SYS commands and RUN to a certain line number. The SYS is especially handy if you have a machine language utility that you use often. The RUN is good if you have a BASIC utility that is stacked at the end of the program that you are working on. I save typing and can define any frequently typed statement or word. I will leave other handy uses for the KEY function for you to discover on your own. It will make your computer life easier. Have fun! **C**

Appointment Calendar *(Continued From Page 91)*

Changing the Schedule

I have formatted the daily schedule so that it fits my needs as a private music teacher. If the hours do not suit your schedule, changing the hourly schedule is simply a matter of changing the column headers in the following manner:

1. Alter the data statements in line 910-930 to reflect the hourly schedule that you want. Please note: these data items must be five characters in length or the form will not print properly, so make allowances for leading or trailing spaces to maintain the five-character length.

2. Make sure that the last hour used for your schedule is the same as the first hour and change the value in the IFHR$=statement in line 282 to reflect this new hour. If you do not make these changes, the calendar will still print. The bottom of the calendar will not be printed properly, however, as the program realizes it is time to print the bottom only when line 282 finds the second occurrence of the beginning hour.

3. You can change the number of data items, but you will have to change the value in the FOR-NEXT loop in line 260. There is not very much room left on a page after the calendar is printed as is, but two or three more hourly slots could be added.

Program Listings

One version of the Appointment Calendar is presented here. It is the C64 version with REMS to help you examine the code. Modifications for the VIC 20 follow.

An explanation of program codes precede the program listing.

Line 10	Branch to String Initialization.
Lines 25-30	Print title display.
Lines 120-210	Starting date input with error detection.
Lines 220-360	Print calendar.
Lines 370-399	Repeat options.
Lines 405-460	Set month length.
Lines 500-530	Set month and ending date if over limit.
Lines 550-570	Check printer prompt.
Line 600	Print dividing line in calendar.
Line 900	Row header data.
Lines 910-930	Column header data (hourly schedule).
Lines 940-955	Check for Leap year.
Lines 1000-1090	Initialize string variables.

C

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VIC-O-Lantern:

A Halloween Trick-or-Treat for the VIC 20 with Super Expander

By Bruce Jaeger

Real Jack-O-Lanterns are messy (and dangerous!) to carve, hard to keep a candle burning inside and can get pretty smelly when you forget to throw them away. And besides, they don't play music, move around or make spooky sounds, either.

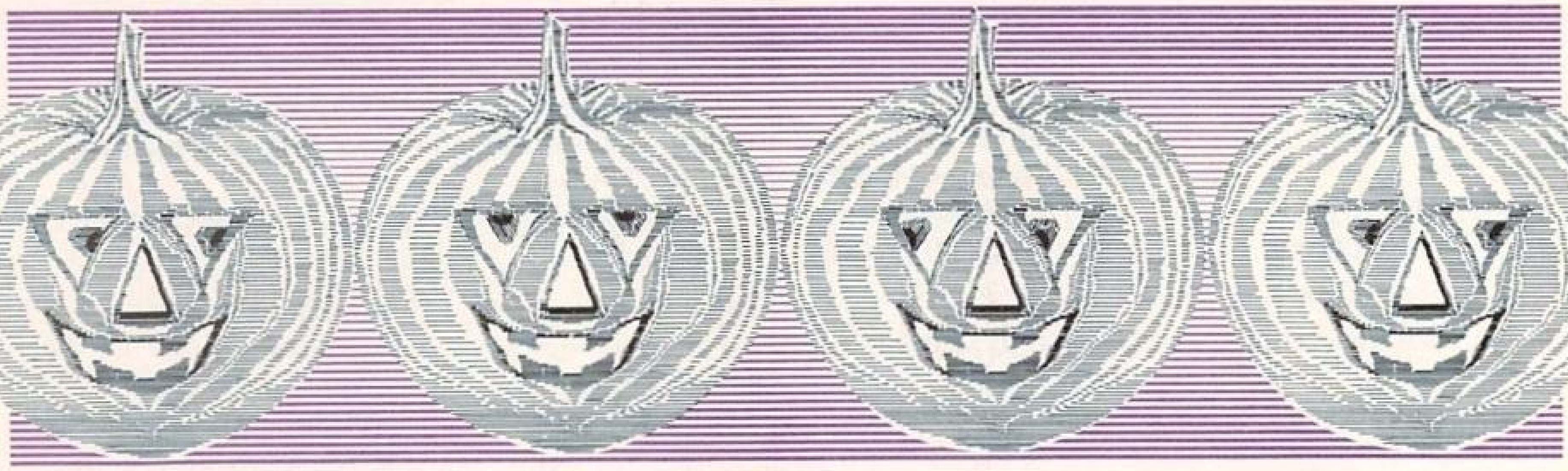
VIC-O-Lantern does all that and more! If you set up your TV or monitor where the neighborhood goblins can see it, they'll be treated to a sinister-looking Jack-O-Lantern that occasionally levitates. Sometimes a bolt of lightning strikes (and the thunder sounds like it was nearby!) while at other times ol' Jack moves his eyes and plays snatches of haunted music or makes secret laboratory sounds.

The only disadvantage to VIC-O-Lantern is that you can't make pumpkin pie from it!

The Program

VIC-O-Lantern requires Commodore's *Super Expander* cartridge that adds several graphics and sound commands to VIC's BASIC, as well as 3K of extra RAM.

You may need to adjust the color on your television set to get the pumpkin the proper orange color. If you want to really put on a good show, adjust the contrast and brightness levels so that the background is a deep black.



VIC-O-Lantern

```
100 REM VIC-O-LANTERN
110 REM BRUCE JAEGER
120 REM     1984
130 REM
140 DIM N(50):KT=0:DEF FN
    R(X)=INT(RND(1)*X)+1
150 KT=KT+1:READ N(KT)
    :IF N(KT)<>-1 THEN 150
160 KT=KT-1:SCNCLR:GRAPHIC 3
    :COLOR 0,8,4,5
170 CIRCLE 2,511,640,400,400
180 DRAW 2,511,550 TO 545,700 TO 477,
    700 TO 511,550
190 DRAW 2,350,450 TO 415,625 TO 260,
    580 TO 350,450
200 DRAW 2,675,450 TO 610,625 TO 765,
    580 TO 675,450
210 DRAW 2,285,850 TO 350,775 TO 400,
    825 TO 450,775 TO 500,825 TO 550,
    775 TO 600,825
220 DRAW 2,600,825 TO 650,775 TO 725,
    850
```

```
230 DRAW 2,725,850 TO 650,930 TO 600,
    875 TO 550,930 TO 500,875 TO 450,
    930 TO 400,875
240 DRAW 2,400,875 TO 350,930 TO 285,
    850:PAINT 2,130,500
250 CIRCLE 0,511,150,300,200
    :CIRCLE 0,511,640,300,400
260 CIRCLE 0,511,640,185,400
    :CIRCLE 0,511,640,90,400
270 CIRCLE 1,860,600,450,650,59,64
    :CIRCLE 1,775,410,260,360,57,62
280 DRAW 1,555,110 TO 575,160
    :COLOR 0,8,4,5
290 GOTO 930
300 REM LIGHTNING
310 FOR Z=1 TO FN R(3):COLOR 1,1,8,5
320 SOUND 0,0,0,128,15:GOSUB 350
    :SOUND 0,0,0,0,0:COLOR 0,8,4,5
330 FOR X=200 TO 128 STEP-1
    :SOUND 0,0,0,X,15:NEXT X
340 FOR X=15 TO 0 STEP-1
    :SOUND 0,0,0,128,X:GOSUB 350
    :NEXT X:NEXT Z:RETURN
350 FOR D=1 TO 75:NEXT D:RETURN
360 FOR D=1 TO 200:NEXT D:RETURN
370 FOR D=1 TO 700:NEXT D:RETURN
380 REM EYES
390 C=0:ON K GOSUB 410,440,470
400 K=FN R(3):C=2:ON K GOSUB 410,440,
    470:RETURN
410 REM EYES RIGHT
420 CIRCLE C,362,565,20,20
430 CIRCLE C,715,560,20,20:RETURN
440 REM EYES LEFT
450 CIRCLE C,310,560,20,20
460 CIRCLE C,668,560,20,20:RETURN
470 REM EYES CENTER
480 CIRCLE C,335,560,20,20
490 CIRCLE C,690,560,20,20:RETURN
500 REM MOVING HEAD
510 P=PEEK(36864):PV=PEEK(36865):P1=P
    :P2=PV:S=1
520 FOR Z=1 TO FN R(12)+9
530 H=FN R(3)-2:IF P1+H<0 THEN 530
540 POKE 36864,P1+H:IF
    ABS(P1+H)<ABS(P+5)THEN P1=P1+H
550 V=FN R(3)-2
560 POKE 36865,P2+V:IF
    ABS(P2+V)<ABS(PV+5)THEN P2=P2+V
570 GOSUB 580:NEXT Z:POKE 36864,P
    :POKE 36865,PV:RETURN
580 S=VAL(RIGHT$(TI$,1)):S1=1
    :IF S/2=INT(S/2)THEN S=2
590 ON S GOTO 600,610
600 SOUND 220,221,0,0,15:GOTO 620
610 SOUND 222,223,0,0,15
620 GOSUB 360:RETURN
630 REM RANDOM SOUNDS
640 FOR X=1 TO FN R(40)+15
650 FOR Y=1 TO 3:S(Y)=FN R(255):NEXT Y
660 SOUND S(1),S(2),S(3),0,15
670 FOR DEL=1 TO FN R(350)+50:NEXT DEL
    :NEXT X:RETURN
680 REM MOUNTAIN KING
690 FOR X=1 TO KT:SOUND N(X),0,0,0,15
    :GOSUB 360:NEXT X
700 SOUND 0,0,0,0,0:RETURN
710 DATA 170,179,183,191,198,183,198,
    198
720 DATA 195,179,195,195,191,174,191,
    191
730 DATA 170,179,183,191,198,183,198
740 DATA 213,207,198,183,198,207,207,
    207,207,-1
750 REM COLORS
760 Q=PEEK(36879)
770 FOR X=1 TO 9:R=FN R(255)
    :POKE 36879,R:GOSUB 350:NEXT
780 POKE 36879,Q:RETURN
790 REM LAB SOUNDS
800 S1=FN R(25)+210:Z=FN R(7)
    :FOR Y=1 TO Z
810 FOR X=S1 TO S1-60 STEP-1
    :SOUND X,X+10,0,0,15:NEXT X
820 FOR X=S1-60 TO S1:SOUND X,X+10,0,
    0,15:NEXT X
830 NEXT Y:RETURN
840 REM SPOOKY ORGAN
850 SOUND 207,227,236,0,13:GOSUB 370
860 SOUND 207,227,235,0,13:GOSUB 370
870 SOUND 204,225,237,0,13:GOSUB 370
880 FOR X=13 TO 0 STEP-1:GOSUB 360
    :SOUND 204,225,236,0,X:NEXT X
890 SOUND 217,232,239,0,15
900 FOR X=1 TO FN R(5)+4
    :SOUND 217,232,239,0,14
910 GOSUB 360:SOUND 217,232,239,0,15
920 GOSUB 360:NEXT X:RETURN
930 REM CALL THE EFFECTS
940 FOR A=1 TO 8
950 ON A GOSUB 380 ,680,300,500,750,
    300,630,790,840
960 NEXT A:GOTO 970
970 REM RANDOM SELECTION OF EFFECTS
980 R=FN R(8)
990 ON R GOSUB 300 ,380,500,630,680,
    750,790,840
1000 GOTO 970
```

C

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INTERFACING BLUE BOOK

Did you know that your 64 can be used to control a 99¢ toy motor so effectively that it runs like a precision machine? Or that you can build a peripheral that enables your 64 to talk for less than $10 in parts?

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Projects include: Cassette, printer and RS-232C interfaces; light pen; bus expander; thermometer; speech synthesizer and two other voice projects; 5 telephone interfaces; A/D and D/A converters; motor controllers; logic analyzer; capacitance meter; FFT spectrum analyzer; home security and many more. Price is $16.95 postpaid. Foreign orders add $3.00 for AIR MAIL shipping.

VIC 20 INTERFACING BLUE BOOK

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14 DAY MONEYBACK GUARANTEE

VIC/64 Disk Utility

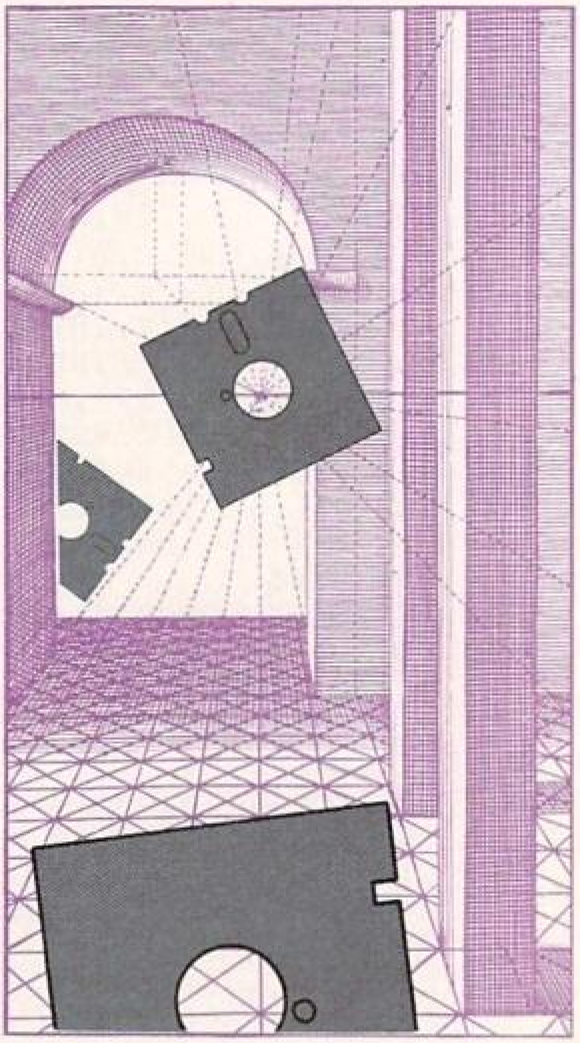
By C. W. DeLaughter

After using the datassette for awhile, I acquired a 1541 disk drive for my VIC 20. After a careful review of the 1541 Disk Operating Manual, it became apparent that it would be handy to write a program to automate actions such as formatting a disk, renaming a program, scratching (deleting) a program and initializing or validating a disk.

A rudimentary version of this disk utility was a first step in increasing the usefulness of the new disk system. The program was written and then rewritten several times. It met the original objectives, but somehow lacked pizzazz. The VIC 20 is not my first personal computer, but all prior experience has been with monochromatic viewing screens. It was easy to forget about the tremendous power to manipulate colors and sound which is a feature of the VIC 20.

On page 106 of the Spring 1984 issue of *Power/Play,* there appeared a brief article by James R. Miller called "Program Pizzazz". With a couple of ideas from that article, it was back to the drawing board for one more revision of my disk utility.

I think you will agree that the result is not only a highly useful utility, but one that is aesthetically pleasing. It is brimming



with color and uses sound to warn you to exercise care when formatting a disk. This warning just might prevent you from formatting a disk with valuable programs. Such a mistake would result in permanent loss of the programs, unless, of course, they had been saved on a separate disk (which, incidentally, is not a bad idea).

This disk utility requires just over 1,700 bytes of memory. It can be used with any VIC 20 memory configuration, from unexpanded to 24K of RAM or anything in between.

Just before press time we received an upgraded version for the 64 from the author. Both versions follow.

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VIC/64 Disk Utility

```
10 SC=53281:BC=53280:POKE SC,1
   :POKE BC,6
20 POKE 36865,150
30 PRINT"[CLEAR,DOWN,RIGHT,RVS,BLUE,
   SPACE8]D I S K[SPACE2]
   U T I L I T Y[SPACE8]"
40 PRINT"[RVS,RIGHT,BLUE] [YELLOW,
   SPACE36,BLUE] "
50 PRINT"[RED,RVS,RIGHT] [YELLOW,
   SPACE36,RED] "
60 PRINT" [RVS,RED,SPACE10]
   (C) COPYRIGHT 1984[SPACE10]"
70 PRINT SPC(19)"[BLUE,DOWN]BY"
80 PRINT SPC(12)"[DOWN]
   C. W. DELAUGHTER"
90 PRINT SPC(13)"[DOWN3]1. [RVS]
   FORMAT[SPACE4]"
100 PRINT SPC(13)"2. [RVS]INITIALIZE"
110 PRINT SPC(13)"3. [RVS]RENAME
    [SPACE4]"
120 PRINT SPC(13)"4. [RVS]SCRATCH
    [SPACE3]"
130 PRINT SPC(13)"5. [RVS]VALIDATE
    [SPACE2]"
140 PRINT SPC(13)"6. [RVS]EXIT[SPACE6]
    "
150 PRINT SPC(13)"[DOWN,RED,DOWN2]";
    :PRINT"ENTER[SPACE2]CHOICE"
160 GET Z$:IF Z$=""THEN 160
170 Z=VAL(Z$)
180 IF Z-1 THEN 200
190 GOTO 310
200 IF Z-2 THEN 220
210 GOTO 460
220 IF Z-3 THEN 240
230 GOTO 520
240 IF Z-4 THEN 260
250 GOTO 620
260 IF Z-5 THEN 280
270 GOTO 710
280 IF Z-6 THEN 300
290 GOTO 770
300 GOTO 10
310 POKE SC,1:POKE BC,0
320 PRINT"[CLEAR,DOWN]"; SPC(14)"[RVS,
    RED]CAUTION![DOWN2]"
330 P$="[BLACK,RIGHT4]
    THIS ROUTINE WILL ERASE ALL
    PROGRAMS[DOWN]":GOSUB 780
340 P$="AS IT FORMATS YOUR DISK. . .
    . . . . . .[DOWN2]":GOSUB 780
350 P$="[RIGHT5]USE NEW DISKS,
     OR BE SURE PROGRAMS[DOWN]"
    :GOSUB 780
360 P$=" ON USED DISKS WILL NOT BE
    NEEDED AGAIN.":GOSUB 780
370 PRINT:PRINT SPC(9)"[RED,DOWN2]
    INPUT DISK NAME"
380 PRINT SPC(9):INPUT"[BLUE]";A$
390 PRINT SPC(9)"[RED,DOWN2]
    INPUT DISK ID CODE"
400 PRINT SPC(9):INPUT"[BLUE]";B$
410 B$=LEFT$(B$,2)
420 OPEN 15,8,15
430 PRINT#15,"N0:"A$","B$
440 CLOSE 15,8,15
450 GOTO 10
460 PRINT"[CLEAR]":POKE SC,1:POKE BC,2
470 PRINT SPC(11)"[DOWN2,RED]
    INITIALIZING . . ."
480 OPEN 15,8,15
490 PRINT#15,"I"
500 CLOSE 15,8,15
510 GOTO 10
520 PRINT"[CLEAR]":POKE SC,15
    :POKE BC,7
530 PRINT SPC(9)"[RED]
    PROGRAM RENAME ROUTINE"
540 PRINT SPC(9)"[DOWN2,BLACK]
    INPUT 'OLD NAME'"
550 PRINT SPC(9):INPUT"[BLUE]";A$
560 PRINT SPC(9)"[DOWN2,BLACK]
    INPUT 'NEW NAME'"
570 PRINT SPC(9):INPUT"[BLUE]";B$
580 OPEN 15,8,15
590 PRINT#15,"R0:"B$"="A$
600 CLOSE 15,8,15
610 GOTO 10
620 PRINT"[CLEAR]":POKE SC,0:POKE BC,3
630 PRINT SPC(9)"[BLUE]FILE [CYAN]
    'SCRATCH' [BLUE]ROUTINE"
640 PRINT SPC(16)"INPUT"
650 PRINT SPC(12)"PROGRAM TO DELETE"
660 PRINT SPC(12)"[YELLOW,DOWN2]";
    :INPUT A$
670 OPEN 15,8,15
680 PRINT#15,"S0:"A$
690 CLOSE 15,8,15
700 GOTO 10
710 PRINT"[CLEAR]":POKE SC,9:POKE BC,7
720 PRINT SPC(11)"[DOWN2,BLACK]
    VALIDATING . . . ."
730 OPEN 15,8,15
740 PRINT#15,"V"
750 CLOSE 15,8,15
760 GOTO 10
770 POKE BC,14:POKE SC,6
    :PRINT"2[CLEAR]":END
780 FOR I = 1 TO LEN(P$)
    :PRINT MID$(P$,I,1);
790 POKE 54296,15:FOR M=240 TO 250
    STEP 5:POKE 54296,M:NEXT
800 FOR D=1 TO 25:NEXT:NEXT
    :FOR D = 1 TO 100:NEXT:RETURN
```

VIC/20 Disk Utility

```
10 SC=36879:POKE SC,30
20 POKE 36865,150
30 PRINT"[CLEAR,DOWN,RIGHT,RVS,BLUE,
   SPACE4]DISK UTILITY[SPACE4]"
40 PRINT"[RVS,RIGHT,BLUE] [YELLOW,
   SPACE18,BLUE] "
50 PRINT"[RED,RVS,RIGHT] [YELLOW,
   SPACE18,RED] "
60 PRINT"[RVS,RED,RIGHT,SPACE3]
   (C) COPR. 1984[SPACE3]"
70 PRINT"[BLUE,DOWN,RIGHT10]BY"
80 PRINT"[DOWN,RIGHT3]
   C. W. DELAUGHTER"
90 PRINT"[DOWN3,RIGHT4]1. [RVS]FORMAT
   [SPACE4]"
100 PRINT"[RIGHT4]2. [RVS]INITIALIZE"
110 PRINT"[RIGHT4]3. [RVS]RENAME
    [SPACE4]"
120 PRINT"[RIGHT4]4. [RVS]SCRATCH
    [SPACE3]"
130 PRINT"[RIGHT4]5. [RVS]VALIDATE
    [SPACE2]"
140 PRINT"[RIGHT4]6. [RVS]EXIT[SPACE6]
    "
150 PRINT"[DOWN,RED,DOWN2,RIGHT4]";
    :PRINT"ENTER[SPACE2]CHOICE"
160 FOR S = 150 TO 25 STEP-1
    :POKE 36865,S:NEXT S
170 GET Z$:IF Z$=""THEN 170
180 Z=VAL(Z$)
190 IF Z-1 THEN 210
200 GOTO 320
210 IF Z-2 THEN 230
220 GOTO 460
230 IF Z-3 THEN 250
240 GOTO 520
250 IF Z-4 THEN 270
260 GOTO 620
270 IF Z-5 THEN 290
280 GOTO 710
290 IF Z-6 THEN 310
300 GOTO 770
310 GOTO 10
320 POKE SC,24
330 PRINT"[CLEAR,DOWN,RIGHT7,RVS,RED]
    CAUTION![DOWN2]"
340 P$="[BLACK,RIGHT5]
    THIS ROUTINE WILLERASE ALL[SPACE2]
    PROGRAMS ASIT FORMATS YOUR DISK.
    [DOWN]":GOSUB 780
350 P$="[RIGHT6]USE NEW DISKS,
     ORBE SURE THAT[SPACE2]PROGRAMS"
    :GOSUB 780
360 P$="ON USED DISKS WILL NOTBE
    NEEDED AGAIN.":GOSUB 780
370 PRINT:PRINT"[RED,DOWN2]
    INPUT DISK NAME"
380 INPUT"[BLUE]";A$
390 PRINT"[RED,DOWN2]INPUT DISK ID
    CODE"
400 INPUT"[BLUE]";B$
410 B$=LEFT$(B$,2)
420 OPEN 15,8,15
430 PRINT#15,"N0:"A$","B$
440 CLOSE 15,8,15
450 GOTO 10
460 PRINT"[CLEAR]":POKE SC,26
470 PRINT"[DOWN2,RED,RIGHT2]
    INITIALIZING . . ."
480 OPEN 15,8,15
490 PRINT#15,"I"
500 CLOSE 15,8,15
510 GOTO 10
520 PRINT"[CLEAR]":POKE SC,31
530 PRINT"[RED]PROGRAM RENAME ROUTINE"
540 PRINT"[DOWN2,BLACK]
    INPUT 'OLD NAME'"
550 INPUT"[BLUE]";A$
560 PRINT"[DOWN2,BLACK]
    INPUT 'NEW NAME'"
570 INPUT"[BLUE]";B$
580 OPEN 15,8,15
590 PRINT#15,"R0:"B$"="A$
600 CLOSE 15,8,15
610 GOTO 10
620 PRINT"[CLEAR]":POKE SC,15
630 PRINT"[BLUE]FILE [CYAN]'SCRATCH'
    [BLUE]ROUTINE"
640 PRINT"[RIGHT7]INPUT"
650 PRINT"[RIGHT3]PROGRAM TO DELETE"
660 PRINT"[YELLOW,DOWN2,RIGHT3]";
    :INPUT A$
670 OPEN 15,8,15
680 PRINT#15,"S0:"A$
690 CLOSE 15,8,15
700 GOTO 10
710 PRINT"[CLEAR]":POKE SC,120
720 PRINT"[DOWN2,BLACK,RIGHT2]
    VALIDATING . . . ."
730 OPEN 15,8,15
740 PRINT#15,"V"
750 CLOSE 15,8,15
760 GOTO 10
770 POKE SC,27:PRINT"[BLUE,CLEAR]":END
780 FOR I = 1 TO LEN(P$)
    :PRINT MID$(P$,I,1);
790 POKE 36878,15:FOR M=240 TO 250
    STEP 10:POKE 36875,M:NEXT M
    :POKE 36878,0:POKE 36875,0
800 FOR D=1 TO 25:NEXT:NEXT
    :FOR D = 1 TO 300:NEXT:RETURN
```

C

Getting Your VIC 20 "In the Mood"

By Donald J. Eddington

This program is a really swingin', hand-clapping rendition of the Glenn Miller favorite "In the Mood." It includes a "walkin" bass, melody instrument and a clapping section. You will be hooked on this swing program once you hear it play.

I got the idea from reading about a similar program for the Commodore 64 which could play like a skiffle band (Butterfield, "The 64 Skiffle Band," *Power/Play,* Spring 1983). So I thought, "If the 64 can copy a band, then so can the VIC 20!" With no possibility of different instrument sounds on the VIC, it would seem that this program could never sound like a band—but it does! The low notes really do sound like a walkin' bass; the high notes sound like a melody instrument; the white noise pulses approximate a clapping sound quite well.

To program this into the swing tempo, I found I had to convert the arrangement into 12/8 meter. I also made all note values into multiples of fast eight notes. This makes the upper part go 2-1 : 2-1 : 2-1 : 2-1 : etc., while the bass part walks to this rhythm : 3 : 3: 3: 3: etc. Meanwhile, the clap rhythm is like this : 3rest: *1* -2rs:3rest: *1* -2rs: against the other two rhythms. Thus, there are three rhythmically independent instruments playing in this computer band.

While programming the VIC 20 to play "In the Mood," I used several shortcuts. The major one was making all note values into two-digit numbers to save space. This was done by subtracting 200 from each note value, then writing it as data. When the note values are read and POKEd into voices, the 200 is added (as variable "X"). This also explains the minus numbers in the data for the bass part—most bass notes are less than 200!!

Another shortcut was my putting all READs and POKEs on a single line for each command. Also, by making all notes as multiples of eighth notes, I eliminated all duration values but one—the timed loop for each eighth note. Then, I made it so that all zeroes are interpreted as rests and so that all non-zero values in the "clap" data are interpreted as a "clap" and a screen "flash". "VIC 20 in the Mood" is a short program (about 2K bytes), but very entertaining and musical.

"VIC 20 in the Mood" can be made to repeat over and over by hitting several keys while the music is playing. It will then play, in perfect rhythm, several times for you. To stop the music, use RUN/STOP and RESTORE. Another thing to try is clapping along with the program (not at all easy for most people!). Just clap on beats two and four (off-beats) and/or follow the flash on the screen. Sounds simple—but it's hard to clap at just the right time! Try it and see!

This is both a fun program and a swing rhythm teacher. Just listen to it, or try to clap along with it! Try to follow the swing in the top voice or just sit back and enjoy it! Imagine yourself playing walkin' bass with the VIC 20 band or just listen to the arrangement! Teaching tool—or fun time song—you will like the "VIC 20 in the Mood".

Line-by-Line Trace

10. REM Program Title and Author
20 to 40. Printed on the screen in assorted colors
45. Color: white screen, cyan border
50. Wait for a key to be typed
60. Color: pink screen, purple border
100. REM voice numbers and volume number
110. Set voice numbers and volume number equal to letters
200. REM: The music starts here
210. Set volume; Define X and Y variables.
220. Read three notes from the data statements
230 to 240. If any note value is zero, then make its value −100.
245. Clap-flash: If "R" is non-zero, then make the screen flash to a black screen with a white border.

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250. If note value is 99, then end song with a GOTO 300.

260. Add 200 to all note values, then POKE each one into the proper voice. (Three voices are used, so there are three POKEs.)

280. A timed loop for each (fast eighth) note. This puts the music into swing tempo.

285. Color: pink screen with a purple border.

290. Loop back for more notes.

300. REM: End of the music and of the song.

320. Turn off all voices; reset data pointer to the first data item; reset color to a white screen with a cyan border.

400. REM: The note values used to play "In the Mood" are following.

410 to 525. The data statements which contain all of the note values and clap values needed to play the song "In the Mood".

VIC 20 in the Mood

```
10 REM COMPUTER'IN THE MOOD!'PROGRAM
   BY D.J. EDDINGTON
20 PRINT"[CLEAR,DOWN2,RIGHT,PURPLE]
   YOU HAVE JUST FOUND[SPACE6]
   YOUR VIC 20[SPACE10]'IN THE MOOD!'
30 PRINT:PRINT:PRINT"[BLUE]
   SING ALONG IF YOU WISH[SPACE2]
   --OR CLAP ALONG-- "
33 PRINT"[DOWN,RIGHT,BLACK]
   LET THE FLASH GUIDE[SPACE5]
   YOUR CLAPPING!!"
35 PRINT"[RIGHT2,DOWN2,WHITE]
   ARRANGED FOR VIC 20[SPACE4]
   BY D.J. EDDINGTON"
40 PRINT"[DOWN2,RED]HIT ANY KEY THEN
   CLAP[SPACE4]TO THE MUSIC!!"
45 POKE 36879,27
50 GET X$:IF X$=""THEN 50
60 POKE 36879,172
100 REM DEFINE VOICES
110 S1=36876:S2=36874:S3=36877:V=36878
200 REM PLAY NOTES OF 'IN THE MOOD!'
210 POKE V,10:X=200:Y=-100
220 READ P,Q,R
230 IF P=0 THEN P=Y
235 IF Q=0 THEN Q=Y
240 IF R=0 THEN R=Y
245 IF R=-2 OR R=-1 OR R=1 OR R=2
    THEN POKE 36879,9
250 IF P=99 THEN 300
260 POKE S1,P+X:POKE S2,Q+X
    :POKE S3,R+X
280 FOR N=1 TO 41:NEXT N
285 POKE 36879,172
290 GOTO 220
300 REM ENDING MODULE--IF NOTE IS 99
    THEN IT STOPS
320 POKE S1,0:POKE S2,0:POKE S3,0
    :RESTORE:GOTO 45
400 REM NOTES FOR 'IN THE MOOD' SONG
410 DATA 7,-5,0,0,-5,0,15,-5,0,25,7,
    -1,0,7,0,7,7,0
415 DATA 15,15,0,0,15,0,25,15,0,9,19,
    -2,0,19,0,15,19,0
420 DATA 25,21,0,0,21,0,7,21,0,15,19,
    2,0,19,0,25,19,0
425 DATA 25,15,0,0,15,0,25,15,0,25,7,
    -1,0,7,0,0,7,0
430 DATA 7,-5,0,0,-5,0,15,-5,0,25,7,
    -2,0,7,0,7,7,0
435 DATA 15,15,0,0,15,0,25,15,0,9,19,
    1,0,19,0,15,19,0
440 DATA 25,21,0,0,21,0,7,21,0,15,19,
    1,0,19,0,25,19,0
445 DATA 25,15,0,0,15,0,25,15,0,25,7,
    -2,0,7,0,0,7,0
450 DATA 9,9,0,0,9,0,19,9,0,25,19,2,0,
    19,0,9,19,0
455 DATA 19,25,0,0,25,0,25,25,0,9,28,
    -1,0,28,0,19,28,0
460 DATA 25,29,0,0,29,0,9,29,0,19,28,
    1,0,28,0,25,28,0
465 DATA 25,25,0,0,25,0,25,25,0,25,19,
    1,0,19,0,0,19,0
470 DATA 7,-5,0,0,-5,0,15,-5,0,25,7,1,
    0,7,0,7,7,0
475 DATA 15,15,0,0,15,0,25,15,0,9,19,
    -2,0,19,0,15,19,0
480 DATA 25,21,0,0,21,0,7,21,0,15,19,
    2,0,19,0,25,19,0
485 DATA 25,15,0,0,15,0,25,15,0,25,7,
    -1,0,7,0,0,7,0
490 DATA 15,15,0,0,15,0,23,15,0,28,23,
    2,0,23,0,15,23,0
495 DATA 23,28,0,0,28,0,28,28,0,15,31,
    -1,0,31,0,23,31,0
500 DATA 28,32,0,0,32,0,15,32,0,23,31,
    1,0,31,0,28,31,0
505 DATA 28,28,0,28,28,0,0,0,-2,-21,
    -21,-1,-21,-21,0,-25,-25,1
510 DATA-25,-25,0,0,0,0,15,15,0,12,12,
    2,0,0,0,15,9,0
515 DATA 17,7,0,0,0,0,19,2,0,21,1,-1,
    0,0,0,23,-1,0
520 DATA 29,-5,0,0,0,0,28,12,0,28,15,
    1,28,15,0,25,25,0
525 DATA 25,25,0,25,25,0,25,25,0,-65,
    -65,1,-65,-65,0,-65,-65,0,99,0,0
```

C

Something New for Commodore Kids

By Betsy Byrne

Starting with the next issue of *Power/Play*, I am going to do something new. I am sure all of you have noticed that both *Power/Play* and our sister magazine, *Commodore Microcomputers*, are now writing about and reviewing products made by companies other than our own.

I didn't want Kids' Corner to be left out of all the excitement, so I started thinking about what good, interesting software for kids *feels* like. I thought about it and thought about it. At first I just couldn't describe that wonderful feeling one gets when one uses a really useful, interesting, fun new computer program or accessory. You, of course, know the feeling I mean—a sort of tingling, expectant feeling. A feeling that says, "Come on! Here's another whole world to explore and adventures are waiting to happen around every corner!"

It's a bit like discovering a book by your favorite author that you have never read. But unlike a book (or the feeling you get while reading it), there is no ending. And no disappointing "ending in view" feeling lurking in wait, as there can be in a book. No, it wasn't quite like the "new book" feeling.

I spent some interesting hours trying other feelings on for size—but none quite fit. Then, in the wink of an eye, I recognized it. As always, after you have worked very hard to get the answer to something, you wonder why you didn't recognize it right away. It was that Saturday Morning Feeling, of course! Not a grownup's Saturday morning where there are innumerable chores to be done and errands to be run, but that magical feeling that Saturdays have when we are not yet grown up. The feeling that there's a whole wonderful day ahead, free of cares and responsibilities. School is out and adventure is waiting. There is no real ending to it, because you can put the feeling away until next week, and when Saturday comes around again, it will be waiting, just as new and bright with promise as ever.

Every Saturday is different, just as each of the experiences waiting in our computers are different. On a sunny Saturday in June, you might go exploring in nearby woods with friends and have a picnic lunch you brought along in a knapsack. On a September Saturday, you might visit a museum and see how the Egyptians used to spend their Saturdays. August brings to mind a Saturday at the beach; December always brings at least one Saturday baking gingerbread men and one of Christmas shopping. In spring, a rainy Saturday might be spent reading a great new book and planting a garden on the muddy Saturday that follows.

The exciting thing about the Saturday morning feeling you get from computers is that you don't have to wait for Saturday morning to experience it! Great software like *KoalaPainter, LOGO* or *Dragonsden* can make Saturday morning happen on Wednesday afternoon, Sunday night or Monday morning. Learning about a new printer or writing a terrific program can keep that Saturday feeling alive all week. I think this is because the first Saturday morning of a whole new age is just beginning. A new age of new ideas and new abilities for everyone, made possible by computers.

Anyway, where was I? (Oh yes...) I plan to start reviewing some of this Saturday Morning stuff, and as usual, I hope you will write and share with me the computing things that give *you* that Saturday Morning feeling. Lists of software or products you think should be included woutd be nice. If you send articles, of course, I may print them along with my own. After all, Saturdays are much more fun when you share them with a friend. C

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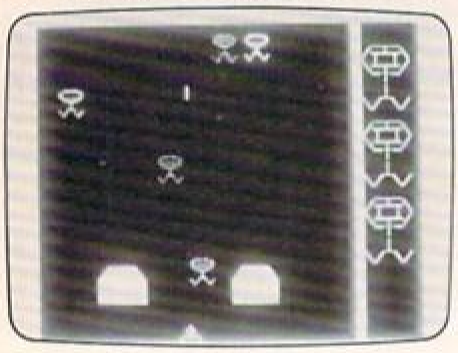

Bad Guys from Space

By David Roberts
Kamloops, British Columbia

You are in control of Omega Base, the last remaining outpost of earth's defenses. You know that you haven't got a chance, but can you hold them off long enough for earth's citizens to escape?

"Bad Guys From Space" is a fast action keyboard arcade game for the Commodore 64. Use the cursor keys to move Omega Base left and right. Hit shift to fire. Watch out! They can swoop down and knock your base out with the slightest touch.

Programmer's Notes

"Bad Guys From Space" is written almost entirely in machine language. Only the set up and number of bases left is done in BASIC. For those interested, the machine language is located at $6000 (the control loop begins at $60B3). Here is a breakdown of where each subroutine begins.

$6000-$6033 = Base movement
$6038-$605F = Move first Attacker
$6060-$60B0 = Fire or move shot
$60B3-$61A0 = Control program
$61E0-$61EA = Timing loop
$6200-$62FF = Move other attackers

Bad Guys From Space

```
0 REM **** DAVID ROBERTS ****
1 REM **** 1151 CHATEAU ST. ****
2 REM **** KAMLOOPS, B.C.   ****
3 REM **** CANADA - V2B 5R3 ****
10 GOSUB 1000:GOSUB 60000
   :PRINT"[CLEAR]"
15 INPUT"[SPACE3]INSTRUCTIONS?";
   A$:IF LEFT$(A$,1)="Y"THEN
   GOSUB 2000
20 D=4:SC=0:INPUT"[CLEAR,SPACE2]
   SKILL LEVEL 1-25 (1=FAST)";SK
   :IF SK>25 OR SK<1 THEN 20
25 FL=0:PRINT "SHIELDS? (Y/N)"
26 GET S$:IF S$<>"Y"AND
   S$<>"N"THEN 26
27 IF S$="Y"THEN FL=1
30 V=53248:GOTO 10000
100 POKE 53281,1:PRINT"[CLEAR]"
    :POKE 53281,0::FOR A=1 TO D
    :GOSUB 1100:NEXT
105 FOR A=1024+33 TO 2023-6 STEP
    40:POKE A,160:NEXT
106 IF FL=0 THEN 110
107 PRINT"[HOME,DOWN,SPACE2]";
108 FOR T=1 TO 2:PRINT"[SPACE4,
    RVS,SHFT POUND,SPACE3,CMDR *,
    RVOFF,LEFT5,DOWN,RVS,SPACE5,
    DOWN,LEFT5,RVS,SPACE5,RVOFF,
    UP,SPACE5]";
109 NEXT
110 KY=PEEK(V+30):KT=PEEK(V+31)
    :SYS 24755:SC=SC+PEEK(29491)
    +PEEK(29492)*256
115 POKE S+19,14:POKE S+18,0
    :POKE S+18,129:FOR A=0 TO 64
    :POKE 53281,A:NEXT
120 D=D-1:IF D=0 THEN PRINT"
    [CLEAR,DOWN,RIGHT]
    IN THIS GAME YOU DESTROYED";
    SC;
130 IF D=0 THEN PRINT "BAD GUYS."
    :GOTO 200
140 IF D>0 THEN PRINT"[CLEAR,
    DOWN,RIGHT]SO FAR YOU HAVE
    DESTROYED "SC"BAD GUYS."
150 FOR A=53250 TO 53248+11
    :POKE A,0:NEXT
153 POKE 29492,0:POKE 29491,0
155 FOR W=0 TO 500:NEXT
    :POKE 198,0
160 GET A$:IF A$=""THEN 160
170 PRINT CHR$(147):GOTO 100
200 PRINT"[SPACE3]PLAY
    AGAIN(Y/N)?":FOR A=0 TO 700
    :NEXT:POKE 198,0
210 GET A$:IF A$=""THEN 210
220 IF A$="N"THEN POKE 53269,0
    :END
230 PRINT"[CLEAR]":GOTO 20
1000 PRINT"[CLEAR,DOWN4,RIGHT4]
     DAVID ROBERTS PRESENTS"
1001 PRINT"[YELLOW]"
1002 PRINT"[SPACE13]"
1003 PRINT"[SPACE4]BBBBB[SPACE3]"
1004 PRINT"[SPACE4]B[SPACE3]BB
     [SPACE9]"
1005 PRINT"[SPACE4]B[SPACE4]B
     [SPACE4]AA[SPACE8]"
1006 PRINT"[SPACE4]B[SPACE3]BB
     [SPACE3]A[SPACE2]A[SPACE2]
     DD[SPACE4]"
1007 PRINT"[SPACE4]BBBBB[SPACE3]
     AAAAAA D D[SPACE3]"
1008 PRINT"[SPACE4]B[SPACE3]BB
     [SPACE2]A[SPACE4]A D D
     [SPACE3]"
1009 PRINT"[SPACE4]B[SPACE4]B
     [SPACE2]A[SPACE4]A DD
     [SPACE3]"
1010 PRINT"[SPACE4]B[SPACE3]BB
     [SPACE14]"
1011 PRINT"[SPACE4]BBBBB[SPACE2,]
      GUYS FROM SPACE!! "
1012 PRINT"[SPACE11]"
1022 PRINT"[DOWN,SPACE4]
     (POKING MACHINE CODE &
     SPRITES)":RETURN
1100 PRINT TAB(34)" [CMDR @3]"
1110 PRINT TAB(34)"[SHFT N,
     CMDR R,CMDR E,CMDR R,SHFT M]"
1120 PRINT TAB(34)"[SHFT M,
     CMDR E,CMDR R,CMDR E,SHFT N]
     "
1130 PRINT TAB(34)" [CMDR Y]T
     [CMDR Y] "
1140 PRINT TAB(34)"[SPACE2,
     SHFT B,SPACE2]"
1150 PRINT TAB(34)"[SHFT M,
     SHFT N,CMDR T,SHFT M,SHFT N]
     " :RETURN
2000 POKE 53281,1:PRINT"[BLUE]
     "CHR$(147)TAB(13)
     "INSTRUCTIONS":PRINT:PRINT
2010 PRINT"[SPACE4]
     IN THIS GAME YOU CONTROL
     THE"
2012 PRINT"[SPACE4]
     LASER BASE AT THE BOTTOM
     [SPACE2]OF"
2014 PRINT"[SPACE4]THE SCREEN.
     [SPACE2]YOUR JOB[SPACE2]
     IS TO"
2016 PRINT"[SPACE4]DESTROY
     [SPACE2]THE[SPACE2]BAD GUYS
     [SPACE2]FROM"
2018 PRINT"[SPACE4]
     SPACE THAT WANT TO TAKE
     OVER"
2020 PRINT"[SPACE4]THE EARTH.
2050 PRINT:PRINT"[SPACE4]
     USE THE CURSOR KEYS FOR
     LEFT"
2060 PRINT"[SPACE4]
     AND RIGHT. HIT SHIFT TO
     FIRE":
2062 PRINT"[SPACE4]THE NUMBER OF
     [SPACE2]SHIPS LEFT IS"
     :PRINT"[SPACE4]DISPLAYED IN
     [SPACE2]THE RIGHT EDGE"
2070 PRINT:PRINT"[SPACE4]HIT
     [RVS] SPACE [RVOFF]
      TO BEGIN"
2080 GET A$:IF A$<>" "THEN 2080
2081 PRINT"":POKE 53281,0:RETURN
10000 POKE 2040,204
      :FOR A=2041 TO 2045
      :POKE A,INT(RND(1)*3)+201
      :NEXT
10010 POKE V+23,0:POKE V+29,0
      :POKE V+39,13:POKE V+40,7
      :POKE V+41,2:POKE V+42,1
10015 FOR T=54272 TO 54296
      :POKE T,0:NEXT T
10020 POKE V,184:POKE V+1,229
      :POKE V+21,255
10030 POKE V+2,160:POKE V+3,50
      :S=54272:POKE S,16
      :POKE S+1,39:POKE S+4,20
      :POKE 54277,9
10130 POKE 54278,0:POKE 54286,244
      :POKE 54287,1
      :POKE 54290,128
      :POKE 54294,113
15000 POKE 29491,0:POKE 29492,0
      :POKE 25057,2
      :POKE 25059,SK*10
16000 POKE S+8,4:POKE S+12,9
      :POKE S+13,0:POKE 54296,15
      :FOR A=V+2 TO V+11:POKE A,0
      :NEXT
16001 GOTO 100
20000 DATA 169, 7, 197, 197, 208,
       15, 169, 24, 205, 0, 208,
       240, 29
20002 DATA 169, 206, 141, 45, 96,
       76, 43, 96, 169, 2, 197,
       197, 208
20004 DATA 15, 169, 248, 205, 0,
       208, 240, 8, 169, 238,
       141, 45, 96
20006 DATA 76, 43, 96, 96, 162,
       8, 206, 0, 208, 202, 208,
       250, 96
20008 DATA 0, 208, 236, 2, 174,
       27, 212, 224, 5, 176, 21,
       174, 0
20010 DATA 208, 236, 2, 208, 16,
       8, 169, 206, 141, 86, 96,
       24, 144
20012 DATA 5, 169, 238, 141, 86,
       96, 162, 1, 206, 2, 208,
       238, 3
20014 DATA 208, 202, 208, 247,
       96, 173, 141, 2, 240, 36,
       165, 253, 208
20016 DATA 32, 169, 7, 133, 252,
       173, 0, 208, 56, 233, 24,
       74, 74
20018 DATA 74, 24, 105, 153, 133,
       251, 169, 1, 133, 253,
       169, 0, 141
20020 DATA 4, 212, 169, 21, 141,
       4, 212, 165, 253, 240, 35,
       169, 32
20022 DATA 162, 0, 129, 251, 165,
       251, 56, 233, 40, 176, 2,
       198, 252
20024 DATA 133, 251, 56, 169, 3,
       197, 252, 144, 5, 169, 0,
       133, 253
20026 DATA 96, 169, 66, 162, 0,
       129, 251, 96, 224, 97, 32,
       56, 96
20028 DATA 32, 224, 97, 238, 0,
       113, 172, 0, 113, 192, 4,
       208, 18
20030 DATA 174, 249, 7, 232, 224,
       204, 208, 2, 162, 200,
       142, 249, 7
20032 DATA 169, 0, 141, 0, 113,
       32, 0, 98, 32, 224, 97,
       32, 40
20034 DATA 98, 238, 1, 113, 172,
       1, 113, 192, 3, 208, 11,
       32, 0
20036 DATA 96, 32, 96, 96, 169,
       0, 141, 1, 113, 238, 2,
       113, 172
20038 DATA 2, 113, 192, 4, 208,
       18, 174, 250, 7, 232, 224,
       204, 208
20040 DATA 2, 162, 200, 142, 250,
       7, 169, 0, 141, 2, 113,
       238, 3
20042 DATA 113, 172, 3, 113, 192,
       4, 208, 18, 174, 251, 7,
       232, 224
      200( 102( 211( 3( 129( 0(
      101, 3, 113
20046 DATA 238, 4, 113, 172, 4,
       113, 192, 4, 208, 18, 174,
       252, 7
20048 DATA 232, 224, 204, 208, 2,
       162, 200, 142, 252, 7,
       169, 0, 141
20050 DATA 4, 113, 238, 5, 113,
       172, 5, 113, 192, 4, 208,
       18, 174
20052 DATA 253, 7, 232, 224, 204,
       208, 2, 162, 200, 142,
       253, 7, 169
20054 DATA 0, 141, 5, 113, 32,
       224, 97, 32, 80, 98, 32,
       224, 97
20056 DATA 32, 120, 98, 173, 31,
       208, 141, 0, 114, 169, 2,
       160, 3
20058 DATA 32, 192, 98, 169, 4,
       160, 5, 32, 192, 98, 169,
       8, 160
20060 DATA 7, 32, 192, 98, 169,
       16, 160, 9, 32, 192, 98,
       169, 32
20062 DATA 160, 11, 32, 192, 98,
       169, 1, 44, 30, 208, 240,
       1, 96
20064 DATA 76, 179, 96, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0
20066 DATA 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0
20068 DATA 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0
20070 DATA 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0
20072 DATA 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 160
20074 DATA 2, 162, 218, 202, 208,
       253, 136, 208, 250, 96,
       214, 0, 21
20076 DATA 87, 117, 80, 255, 192,
       255, 119, 255, 80, 255,
       233, 211, 0
20078 DATA 255, 218, 255, 157,
       255, 174, 27, 212, 224,
       10, 176, 21, 174
20080 DATA 0, 208, 236, 4, 208,
       16, 8, 169, 206, 141, 30,
       98, 24
```

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20082 DATA 144, 5, 169, 238, 141,
      30, 98, 162, 1, 206, 4,
      208, 238
20084 DATA 5, 208, 202, 208, 247,
      96, 174, 27, 212, 224, 10,
      176, 21
20086 DATA 174, 0, 208, 236, 6,
      208, 16, 8, 169, 206, 141,
      70, 98
20088 DATA 24, 144, 5, 169, 238,
      141, 70, 98, 162, 1, 238,
      6, 208
20090 DATA 238, 7, 208, 202, 208,
      247, 96, 174, 27, 212,
      224, 05, 176
20092 DATA 21, 174, 0, 208, 236,
      8, 208, 16, 8, 169, 206,
      141, 110
20094 DATA 98, 24, 144, 5, 169,
      238, 141, 110, 98, 162, 1,
      206, 8
20096 DATA 208, 238, 9, 208, 202,
      208, 247, 96, 174, 27,
      212, 224, 21
20098 DATA 176, 21, 174, 0, 208,
      236, 10, 208, 16, 8, 169,
      206, 141
20100 DATA 150, 98, 24, 144, 5,
      169, 238, 141, 150, 98,
      162, 1, 238
20102 DATA 10, 208, 238, 11, 208,
      202, 208, 247, 96, 208,
      209, 16, 211
20104 DATA 0, 253, 25, 249, 245,
      65, 117, 0, 222, 255, 0,
      253, 0
20106 DATA 255, 0, 255, 24, 253,
      17, 253, 0, 249, 0, 255,
      64, 255
20108 DATA 131, 216, 44, 0, 114,
      208, 1, 96, 169, 0, 153,
      0, 208
20110 DATA 173, 27, 212, 153,
      255, 127, 238, 51, 115,
      208, 3, 238, 52
20112 DATA 115, 206, 227, 97,
      208, 10, 206, 225, 97,
      208, 5, 169, 2
20114 DATA 141, 225, 97, 169, 32,
      162, 0, 129, 251, 134,
      253, 169, 0
20116 DATA 141, 11, 212, 169,
      129, 141, 11, 212, 96, 0,
      0, 0, 157
20118 DATA 0, 0, 0, 0, 0, 0, 0,
      0, 0, 7, 255, 192, 28
20120 DATA 195, 56, 63, 255, 252,
      48, 0, 12, 63, 255, 252,
      28, 0
20122 DATA 56, 12, 195, 48, 3,
      255, 192, 0, 60, 0, 0, 24,
      0
20124 DATA 0, 24, 0, 0, 60, 0, 0,
      255, 0, 0, 195, 0, 225
20126 DATA 129, 135, 49, 129,
      140, 27, 0, 216, 14, 0,
      112, 0, 0
20128 DATA 0, 0, 0, 0, 0, 0, 0,
      0, 7, 255, 192, 28, 195
20130 DATA 56, 60, 0, 60, 51,
      255, 204, 60, 0, 60, 31,
      255, 248
20132 DATA 12, 195, 48, 3, 255,
      192, 0, 60, 0, 0, 24, 0, 0
20134 DATA 24, 0, 0, 60, 0, 0,
      255, 0, 112, 195, 14, 25,
      129
20136 DATA 152, 27, 0, 216, 14,
      0, 112, 0, 0, 0, 0, 0, 0
20138 DATA 0, 0, 0, 0, 0, 0, 0,
      7, 255, 192, 28, 195, 56
20140 DATA 60, 0, 60, 48, 0, 12,
      63, 255, 252, 28, 0, 56,
      15
20142 DATA 255, 240, 3, 255, 192,
      0, 24, 0, 0, 60, 0, 0, 60
20144 DATA 0, 224, 24, 7, 32,
      255, 4, 16, 195, 8, 25,
      129, 152
20146 DATA 27, 0, 216, 14, 0,
      112, 0, 0, 0, 0, 0, 0, 0
20148 DATA 0, 0, 0, 0, 0, 0, 7,
      255, 192, 31, 255, 248, 60
20150 DATA 0, 60, 48, 0, 12, 60,
      0, 60, 31, 255, 248, 12,
      195
20152 DATA 48, 3, 255, 192, 0,
      60, 0, 0, 24, 0, 0, 24, 0
20154 DATA 0, 60, 0, 0, 255, 0,
      112, 195, 14, 25, 129,
      152, 27
20156 DATA 0, 216, 14, 0, 112, 0,
      0, 0, 0, 0, 0, 0, 0
20158 DATA 0, 0, 0, 0, 0, 0, 0,
      0, 0, 0, 0, 0, 0
20160 DATA 0, 0, 0, 0, 0, 0, 0,
      0, 0, 0, 0, 0, 0
20162 DATA 0, 24, 0, 0, 24, 0, 0,
      153, 0, 0, 153, 0, 0
20164 DATA 255, 0, 0, 24, 0, 3,
      255, 192, 15, 255, 240,
      24, 255
20166 DATA 24, 60, 0, 60, 60, 0,
      60, 0, 255, 65, 255, 65,
      255
20168 DATA 112, 195, 14, 25, 129,
      152, 27, 0, 216, 14, 0,
      112, 0
20170 DATA 0, 0, 0, 0, 0, 0, 0,
      0, 0, 0, 0, 0, 0
60000 FOR A=24576 TO 25339:READ D
      :POKE A,D:NEXT
60005 READ D:READ D:READ D
      :FOR A=200*64 TO 205*64
      :READ D:POKE A,D:NEXT
      :RETURN
```

C

Dancing Feats

Reviewed by Ted Salamone

Computer: Commodore 64
Manufacturer: Softsync, Inc.
14 E. 34th Street
New York, NY 10016
Medium: Disk/Tape

Dancing Feats more than lives up to its billing as the one man joystick band. Unlike the typically depicted inept bumbler with cymbals on his knees and four harmonicas in his mouth, 64 owners using this program can easily create entertaining music.

This is not an educational package purporting to teach anything whatsoever about music. Though there are brief allusions to and terse definitions of the terms used, *Dancing Feats* is not a substitute for several years at Juilliard.

That's what makes it so good. Anyone, absolutely anyone, can be jamming in under 20 minutes. Experimentation is the key word because of the ease with which changes can be made in any of the selectable factors.

Options abound! Would-be musicians can change the bass, beat, style, tempo or ending with the flick of a joystick and effortlessly customize the compositions to create a personal style or statement.

Depressing the fire button activates the menu chosen, thereby shaping the backup band. Unaccompanied arrangements can be produced by pressing the "A" key to trigger the Acappella routine.

The bass menu provides jazz, rock, blues and boogie woogie; while the tempo menu sets the pace: adagio (slow), allegretto (moderately fast), allegro (fast) and vivace (very fast).

Beat choices run the gamut from cool and beguine to dance or syncopated. Swing and blues scales comprise the style submenu while the ending menu consists of the Duke, Elvis, the Chance and Mozart. Each ending automatically winds down the composition in a manner best described by the titles themselves.

Besides highlighting the current choice, each submenu has a main menu option, thus allowing for an easy return.

Dancing Feats has a two-octave range activated by hitting the fire button when in the play mode. The notes and chords produced are listed onscreen for those willing to pry their eyes from the extremely striking visual interpretation of those very notes.

Since the computer is generating the sound, it is impossible to be out of tune. As the chords change, so do the ranges of playable notes. No out of place notes to worry about.

All but the Acappella compositions can be recorded for playback. The disk version allows a maximum of one hour's worth of creations to be saved; the tape can handle fifteen minutes.

Even better is the capability to save and load the melodies to disk or tape. This way, favorite pieces can be saved for future enjoyment or modification.

The command structure to implement all these wonderful options is actually very simple. The function keys 1, 3 and 5 return the program to the main menu from the play mode, which is entered into by keying the F7 function key.

The "R" key starts the record mode; the "P" key does the same for the Playback option. Depressing "S" saves tunes and hitting "L" loads them to the 64's memory from the storage media. Once loaded, "P" plays them back. Easy so far, right?

The CLEAR/HOME key aborts the save and load functions before they are entered with the RETURN key. Any of the single keystroke commands can be reversed by just depressing the key again.

Once familiar with the mechanics, 64 folks can get down. A little joystick finesse coupled with proper firebutton timing goes a long way.

Single notes can be played, but the true strength of *Dancing Feats* lies in its ability to produce chords and incredible riffs. A quick mixing motion wrist action keeps the harmonies hopping, the colors popping and the smiles never stopping.

Dancing Feats is addictive. The high degree of user friendliness cries out for experimentation. This reviewer's recommendation is to give in to those cries. Come on, be a *Dancing Feats* fool. **C**

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Turtle Toyland Jr.

Reviewed by Kelley Essoe

Computer: Commodore 64
Publisher: HesWare
150 N. Hill Drive, Suite 35
Brisbane, CA 94005
Medium: Disk

Ladies and Gentlemen, youngsters and oldsters, step right up . . . one small admission fee and the rest is free. Welcome to *Turtle Toyland, Junior.* Ready to play the shell game? Oh, come on. No need to turn turtle . . . you can't lose, you might learn something and it's lotsa fun to boot. This turtle is no turkey.

Calling *Turtle Toyland Jr.* from HesWare an educational program is a bit like referring to Disneyland as an amusement park. The analogy is quite accurate, but profoundly understated.

Turtle Toyland, Jr. is a Disneyland on disk, complete with a variety of themed lands intersected by a Main Street Square called Crossroads.

Once you enter the magical kingdom of *Turtle Toyland Jr.,* the screen displays a toybox decorated with two flashing turtles. By firing your joystick button while the larger turtle is flashing, you can head straight to the Main Street Crossroads. If you select the smaller turtle, you immediately hop the part train to Playground Land, a special turtle petting zoo where you learn how to "turtle". Here you can practice moving the turtle around the screen, learn how to make the turtle draw and become familiar with the Turtle Toys: icons which, when chosen, help the turtle do its tricks for you.

After you've had some turtle practice in the Playground, you will find yourself magically transported to the Crossroads: Main Street T.T.J. (Turtle Toyland Jr.). Allow me to be your park tour guide for your introductory visit.

Ah, here we are standing in the middle of Turtle Park, surrounded by all the different lands. Where to first? Let's see. Straight ahead is the Toybox. That's where you can store, arrange and build your own programs with all the drawings, sprites and musical compositions you'll be creating. We'll make that one of our last stops on the tour. To the upper left is the Playground where you've just been. Music Land is off to our upper right and behind us is Sprite Land. To the left of Sprite Land is I/O Land, a speedy monorail system that connects us to the nearby Disk Drive Hotel. On the other side of Sprite Land is where we make our next stop: Training Land. So turn the turtle to face the Training Land icon, press the fire button and off we go!

In Training Land, you train your turtle to draw pictures. Along the bottom of the screen you will recognize the same icon toys that you saw in the Playground. With your joystick you can pick and choose from the toys according to your needs. The Paint Pot, Background and Border icons change the colors you are working with. The Pen icon toggles the drawing/not drawing mode and also switches between the pen widths. The Eraser eliminates the last Turtle command, the Trash Can throws out your current drawing and the Crossroads icon takes you back to Main Street.

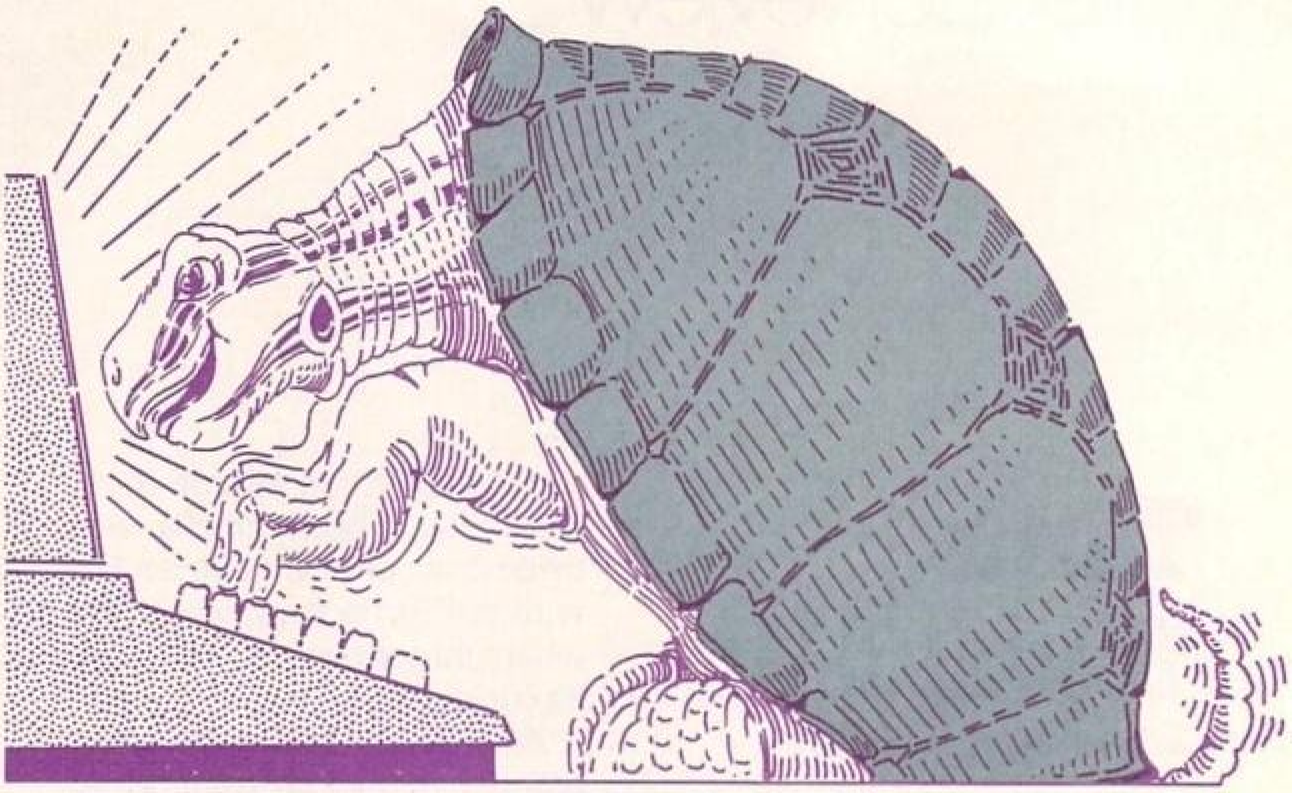
With the three pen widths, three drawing colors and a variety of border and background colors, you can have a wonderful time just turtle-ing around or you can create a background drawing that you will store in the Toybox for use in your own animated film clip.

I'm sorry. I know you want to stay and play awhile, but we really must get on with the tour. We still have four more lands to cover.

Back to the Crossroads. From there we'll just mosey on over to Sprite Land.

Here in Sprite Land you can create your own little characters called sprites with a miniature turtle that crawls across the sprite grid. A sprite can be just about anything you can imagine . . . cars, ducks, boats, trees, people spaceships, birds or monsters. With the icon toys, you can choose Draw, Erase, Paint Pot, Trash Can and Sprite Training. This last icon lets you take your finished sprite to the Training Land. Only now you won't be there to draw. You are there to teach your turtle exactly what you want him to do with your sprites in your final Film Clip.

With the joystick, you have the turtle carry your sprite to the area of the screen in which you want the sprite to begin moving. Then you turn the turtle to face the direction in which you want the sprite to move. The menu below is changed now too. Once you have set up the beginning point and direction of travel, you can move down to the menu and set the speed of sprite travel and adjust a directional fine angle. When you're finished "training" your sprite, you can go back to Sprite Land and make another sprite, redraw a previous sprite or go back to the Crossroads in order to store your trained sprite in the Toybox.



From Crossroads let's now go over to Music Land. In this area of the park you can write music. Fiddle around with a familiar tune, bang out your own melody or compose the score to your animated film clip. By moving your joystick forward, the note on the music chart will make a circuit of a single octave. When you hear the note you want, select it by pressing the fire button. Continue composing in this manner until you have filled the chart with notes. If you have a longer melody than the length of the chart allows, you can store the first part in the Toybox and come back to write part two, part three and so on.

The menu for Music land has an icon called Go which plays your finished piece of music back for you. You also have a choice of musical instruments. Go ahead, write yourself a little tune. Now see what it sounds like on the guitar. How about a flute . . . or maybe a horn? If all else fails, just about anything sounds good on the piano. If not, the Trash Can is there to save you from yourself.

Let's see now. Only two more lands to go. Next stop: the magical Toybox.

This is truly the heart of *Turtle Toyland.* Here is where you have stored all your drawings, sprites and melodies that you created in the other areas of the park. If you thought *making* them was fun, wait'll you start putting them together into your own animated mini-motion picture.

The *Toybox* can store up to a total of 28 elements. There are 16 boxes for storing the drawings from Training Land, six sprite boxes for your Sprite Land creations and six music boxes for your Music Land compositions.

To the right of the storage areas are 16 Film Strip boxes for creating your animated story. You can put the contents of any storage box into any one of the Filmstrip Boxes with your joystick. Select a Filmstrip Box by pressing the fire button, then go to either a drawing, sprite or music box and choose the element you want by pressing the fire button again. You fill all 16 Filmstrip boxes in this manner.

But how are you going to control the timing and coordination of all these elements? Along with the familiar Trash Can and Crossroads icons in the menu at the screen bottom, are some new toys that provide just about everything you need in order to end up with an impressively polished little program.

The arrow allows you to change from one sprite to another within your program and the Stop sign will stop a sprite or music at the point in which you place it in your Filmstrip. You can use the Clock to give your music or sprites a definite time to run and the Loop Arrow makes a set of Filmstrip boxes repeat their actions again and again according to the number you set into the loop counter. The Steps are to be used with the Loop Arrow and can make Turtle drawings bigger or change their angle.

For example, let's say you have drawn a background scene in Training Land that consists of purple mountains surrounding a blue and green lake. In Sprite Land, you created a fireball red sun, a yellow smiling quarter moon, a couple of fluffy pink clouds, a flock of birds and two sailboats, one facing left and one facing right. You have trained all these sprites to move at varying speeds across the screen from different starting points. You composed two different melodies in Music Land. One is an upbeat piano tune and the other a soft flute lullaby. Now you want to create a film clip using all of these elements.

First you would put the background into Filmstrip box one. Then put your first melody into box two to start the music at the beginning of your picture. Next would go the Sun sprite into Filmstrip box three. In boxes four through six you would put the two clouds and the flock of birds. The left-facing sailboat goes into box seven. Next a clock to time the first sailboat, followed by a Stop Sign and the right-facing sailboat. Another clock to time the second boat goes into box ten. Fix a loop connecting the sailboats and their clocks to repeat their action four or five times. Now Stop Sign the Sun in box 11. In box 12 put the Moon. Use the left arrow and the second melody in box 13 to switch from one tune to the next as the Moon rises over your scene.

Experiment with different time clocks, loops and sprite sequences. Go back to Sprite Land and retrain some of the sprites to go slower or faster or to begin in a new spot. Try Stepping the sailboats or the Sun and see what that looks like.

Speaking of seeing what it looks like, the last two icons provide two different viewing modes. The Eye lets you look at or listen to any individual element stored in the Toybox and the Go sign takes you to the premier feature presentation of your finished Film Clip.

Not exactly Steven Spielburg? That's okay. Back to the Toybox to cut it all together again. There's always the Trash Can, you know, and you can start all over again from scratch. How about a cowboy and Indian scene? Or pulsating geometric patterns that grow and change to an eerie melody? Create your own Mickey Mouse Film Clip or perhaps an outer space scene complete with shooting stars, spaceships and black holes. There are no limitations on what you can create in *Turtle Toyland Jr.*

When you've got your film just the way you want it and you've showed it off to any and all passing family and friends and even your dog has had to sit through three screenings, it's time to move on.

Our last stop is I/O land.

Once you have some drawings from Training Land, a few sprites from Sprite Land, a couple of melodies from Music Land and perhaps a Film Clip cutting them all together, they are all stored in the Toybox. You can come here to I/O Land and save the entire contents of your Toybox onto a diskette for future admiration or reworking.

You can also load any of your previously saved Toyboxes back into *Turtle Toyland* from here.

There are four demonstration programs on your *Turtle Toyland Jr.* disk which you can load in as well. These are terrific little animated sequences which show how various elements from the Toybox have to be integrated into a motion picture.

The demos provide a marvelous indepth tutorial on putting together your own film clip. Once you have a demo loaded into the Toybox, you can use the Eye to see just how the drawings, sprites and music have been created. Or you can go through the Filmstrip boxes and study how the loops, steps, clocks and stop signs have been used.

As you can see, *Turtle Toyland Jr.* has many advantages over any other amusement park. This magical kingdom is incredibly conveniently located, there's never any traffic on its streets, none of the rides have an age limit and it's open 24 hours a day.

Of course, the biggest advantage is . . . the park is all yours. **C**

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... Sonar reports the "whine" of torpedoes running toward you. You kick the destroyer's rudder full-right and order flank speed.

As you watch, two torpedoes cross your bow. Sonar returns quicken and you close on the submarine below. Suddenly, bearing to target shifts 180 degrees and the sonar return is instantaneous. THE SUB IS DIRECTLY BELOW! You stab the fire button and watch as 6 depth charges arch into your wake. Several long seconds pass before they explode, sending six domes of white water to the surface. The message "SUBMARINE SUNK" flashes on the screen. But congratulations are brief. Four more subs are lurking out there somewhere, trying to escape into the open ocean...

SONAR SEARCH is a "fast-action" strategy game based on anti-submarine warfare. You are the commander of a group of three destroyers sent to intercept a pack of 5 enemy submarines. Equipped with sonar gear and depth charges, and aided by submarine sightings from other ships and aircraft, you must get directly over a sub to score a hit with your depth charges.

SONAR SEARCH makes full use of the high-resolution graphics, multicolor and audio capabilities of the Commodore 64. Programmed in machine language to provide immediate response to your commands, SONAR SEARCH is realistic, educational and entertaining. Comes complete with Instruction Manual and keyboard template.

12

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Four Word Processors for the VIC 20

By Walt Lounsbery

I have come to think of the term word processor as a meaningless addition to the English language. Oh sure, if somebody tells you they wrote a manual, a letter or even their last will and testament on a GEE WHIZ 2000 Word Processor, you'd be impressed that they had mastered such a computer program; surely doing a much better job than they could have with a typewriter. You'd probably think this even if you realized there is often not very much distinction between a good office typewriter and some word processor programs. So, it is very important for us to be on the same wavelength, to understand here why Brand X word processor is better at a particular job than Brand Y.

Here we will be looking at the capabilities of four word processing programs for the VIC 20—*HESWriter, TOTL.Text2.5, Wordcraft 20* and *Write Now!*. Some of these can handle portions of fairly complicated jobs and some only the barest minimum of tasks. Table 1 provides a listing of common word processor tasks, along with desirable features for the jobs and indicates which of the word processors can perform which tasks.

Even though we are most interested in what these programs can do for us, there are a few other concerns as well. Is it easy to use? Does the program expand into more features with additional software? Since many types of printers, disk drives and displays can be attached to the VIC 20, we want to know what the program is compatible with. Does it have communication capability? Finally, how much does it cost? Sometimes it is nice to have a few of those extra features, especially if they cost only a few dollars more.

Without any more fuss, here is what I discovered after taking a good hard look at these four word processors for the Commodore VIC 20 computer.

What These Word Processors Do

Perhaps I should have made the title for this section "What These Word Processors Do Not Claim To Do". Even though it would be a bit wordy, it would be much more accurate. You see, just as the term word processor is vague, so are the advertisements for word processors. It is very difficult to find any straightforward claims in the advertisements.

Of these four programs, only two make definite claims (mainly on the box, not necessarily in the magazines). The *HESWriter* package says, "Using it, you can write simple notes, letters, even manuscripts." The *TOTAL.Text* package says, "If you want your VIC 20 to produce professional looking papers, letters and forms for school and business, *TOTL.Text 2.5* with Chickspeed can help you do it . . . a powerful tool for everything from general everyday use to the specialized formatting of a thesis or dissertation." The rest of the advertising copy sounds about the same. *Write Now!* is "an easy to use professional word processor . . .". *Wordcraft* is simply a "word processing program". With extravagant, hard-hitting claims like these, reviews of these products are almost superfluous.

Actually, it is possible to do somewhat better here. In Table 1 I have summarized the pros and cons or each of these programs in light of the requirements of specific types of jobs. This should provide an overall idea of what each can do. But let's go into a little more detail about each of the different types of jobs you might want your word processor to do.

Simple Column Text

Comparisons of how these four word processors meet my list of requirements for a simple text formatting job reveal some very surprising facts. For one thing, *HESWriter* does not support any kind of tabbing, and *TOTL.Text* has only a limited tab. Insufficient tabbing can quickly lead to frustration on many types of jobs.

While the capability to split words (invisible hyphen) is very convenient, it is not essential. Text that is formatted within normal margins—say, text lines of over fifty characters—will usually look fairly good without it. But if it is necessary to indent text for a lengthy quote or write a slim newsletter/newspaper column with less than a forty-column text width, a large word will tend to get left on a line all by itself. Besides looking rather odd, the long words will appear similar to section titles, especially if they are capitalized. How large are words that create this problem and how common are they? Well, I believe only twenty-letter words are bothersome, but they are common enough. Take, for example, "newsletter/newspaper" appearing a few sentences ago! In light of the requirement to split words for simple text formatting, it is disappointing to see that the majority of these products do not support soft hyphens.

The final result is that *Wordcraft 20* is the only product that can tackle all of my requirements for producing simple column text. *TOTL.Text* and *Write Now!* are close, while *HESWriter* could get rather frustrating to use. However, I must say at this point that, having used *HESWriter* for extended periods of time, this summary for this particular task does not tell the whole story. Let's proceed to discuss the rest of the summary before we draw any conclusions.

Manuscript Text

Most real text jobs fit under the category of manuscript text. This is writing intended to directly produce something according to some format guideline, in its final form. For example, this would include a letter, a class or business report, a dissertation or an article of a technical nature. When someone asks how good a word processor is, they probably want to know how well it formats manuscript text (not to mention how well it edits that text, as we will discuss in a moment). Since there have already been some deficiencies in the simple column text area, you will have to expect to use your best judgment with the results shown in the table of features for manuscript text.

Instead of repeating the results that you can see in the table, I will point out some of the interesting features and limitations of each of the four word processors. Of course, it would be amazing to find any word processor costing less than $400 that has every single one of the features listed. In fact, only one dedicated word processor in my experience has hanging indents, for instance. That machine is the Xerox 860 (STAR) and it costs about $20,000 and requires an expensive printer for use.

It is interesting to note that the programs that don't do simple column text very well have features that are useful for manuscript text. *HESWriter*, at the bottom of the heap before, now looks fairly decent. Its centering feature is reliably limited to single lines. It supports underlining, superscripts, subscripts and special symbols (non-ASCII graphics symbols on the printer) by allowing literal graphics from graphic key combinations to be stored with the text. However, although this is useful with a Commodore printer, the majority of adapters for non-Commodore printers will not emulate the graphics and may do conversions that affect special code sequences. Also, some code sequences will affect the screen. In other words, it can be extremely awkward to use.

TOTL.Text is a very surprising program. In the first place, most of it is written in the BASIC native to the VIC 20 and this portion of the word processor can be modified. On the other hand, speed would normally suffer compared to programs coded in machine language. However, the author has obtained the best of both worlds by coding the critical parts of the program in machine language. Although the ability to modify the program can be important to text formatting, since it makes it possible to add your own formatting commands, I do not believe that very many people can use this feature.

As for the commands, *TOTL.Text* normally executes, underlines, superscripts and subscripts. Special symbols are supported by special code commands. The footnote and header are implemented rather well, unlike *HESWriter*. The program's main shortcoming is limited text file linking during printing, a feature that requires manual input of the next file to print. This wouldn't be so terrible if you did not have to wait to key in each new file name until after the word processor has finished printing the current file.

Wordcraft 20, on the other hand, is something of a disappointment. This program is derived from *Wordcraft 80*, a word processor for the CBM series of Commodore business computers. *Wordcraft 80* is full-featured and is very suitable for professional applications such as office work and magazine preparation. *Wordcraft 20*, on the other hand, as you can see in the table, is chopped down so much that it has limited use in preparing any kind of manuscript. Also, like *TOTL.Text*, it requires manual input of the next file to print, if you wish to link several files in a single printing operation. The fact that the program does support text merging does not help, since the text memory is so small.

However, the program has the ability to produce justified text, centered text or hanging indents because of its full-formatted screen-edit capability, which also makes it the only program with a true formatted text preview. Unfortunately, however, if you want centered text, you must count columns exactly as on a typewriter. The program does not really have a header or footnote capability beyond this full-page formatting, which the operator must perform manually. *Wordcraft 20* is the only program of the four that cannot send special codes to the printer. It does, however, have the ability to format numbers with decimal tabs.

Last but far from least, in this category, there is *Write Now!*, a strong word processor without any problematic peculiarities. As you can see in the table, underlining, superscripts, subscripts and special symbol capabilities are all supported by special commands to send codes to the printer in a variety of ways. In fact, after reviewing the manuscript text features of the four programs, we can see that *Write Now!* stands out, *TOTL.Text* is second best, *HESWriter* is next and *Wordcraft 20* has the fewest features in this category.

Document Text

The document text features of the four word processors are presented only as a matter of completeness. I define document text here as the high-quality text formatting required for complete documents adhering to strict specifications. If a word processor had all of these features, plus those previously defined for manuscript and column text, it could be used to produce a book, magazine or other publication without resorting to any aids, other than typesetting and graphics. Naturally, a word processing program marketed for personal computers cannot be expected to tackle such a job. However, some of these do support several advanced features.

The real surprise here is *Write Now!*. Among other things, *Write Now!* has the interesting capability of printing page numbers in roman numerals, a requirement for thesis and many other document forms. It can also perform paragraph collection, which is extremely helpful when applied to tables and to prevent pages that start with the last few words of the previous paragraph.

Form Business Letters

The last word processing task, form business letters, is quite specialized. It is a desirable feature if you need to create forms that can be recalled and filled out or address business letters that can be sent to several people on some computer file list. Of course, it is also often worthwhile to scatter personal references throughout such computerized business letters.

As you can see in Table 1, *HESWriter* cannot possibly tackle form letters. Both *TOTL.Text* and *Write Now!* have limited facilities for keyboard text entry for this purpose. *TOTL.Text* keyboard entry is fixed at six lines of text and limited editing of the lines is possible. But it cannot do form fill-in and its mail list merge is oriented only toward addressing. *Write Now!* accepts only 16 characters of text from the keyboard. However, this can be circumvented by creating building blocks of text on a separate file, which can then be combined with the regular form letter. *Wordcraft 20* is oriented only toward addressing, although a mail list file can be built to allow other merge formats. *Write Now!* has the most flexible mail list merge, but does not really support form fill-in.

I must say that if you have read the entire description of features of these four programs, you must be very interested in obtaining the best possible program! Yet, there is certainly no simple way to grade these programs, even if we narrow the field and compare only certain jobs. *Wordcraft 20* is the best simple column text processor, while *TOTL.Text* can be made to tackle several jobs and is surprisingly good at manuscript text and mail list merge. But *TOTL.Text* does have some odd quirks, such as lack of text centering. *Write Now!* handles many tasks. Addition of letter-quality printer support and form fill-in features would make it an excellent text formatter for any job.

Of course, if you have been so thorough as to read this description, you know that you have only part of the story so far. Not only do these programs format and print text, they also tell the VIC 20 how best to accept your commands. There is also the matter of text storage and whether the authors have made their word processor compatible with other useful programs, VIC 20 devices or added unique features.

Using the Word Processors

Table 2 is a list of several main user friendly features that can make or break a program at times, although they may seem minor at first glance. For instance, since *TOTL.Text* requires a 16K memory expansion to hold the program (since it does not come on cartridge), those people with less memory expansion than this will not even be able to use the program. I must note, though, that there is also version 2.0, which requires only 8K of memory expansion. However, this does not have many of the features of *TOTL.Text 2.5* and is not reviewed here.

Wordcraft 20 itself has peculiar memory requirements. There is 8K of memory expansion built into the cartridge, along with 16K of ROM (the ROM

Table 1. Typical Text Jobs

Key:
HES—*HESWriter* WOR—*Wordcraft 20* Y—Yes, has feature N—No, does not have feature
TOT—*TOTL.Text 2.5* NOW—*Write Now!* L—Limited capability

Simple Column Text

Feature	HES	TOT	WOR	NOW
Margin settings	Y	Y	Y	Y
Paging and page number	Y	Y	Y	Y
Tabs	N	L	Y	Y

	HES	TOT	WOR	NOW
Word wrap with invisible hyphen	N	Y	Y	N
Line spacing set	Y	Y	Y	Y

Manuscript Text

Feature	HES	TOT	WOR	NOW
Text justification	Y	Y	L	Y
Text centering	L	N	L	Y
Variable line spacing	Y	Y	N	Y
Decimal tab	N	N	Y	N
Right-justified tab	N	N	N	N
Hanging indents	N	N	L	N
Underlining	L	L	L	L
Footnotes	N	Y	N	Y
Headers	Y	Y	N	Y
Text merge	N	N	Y	Y

	HES	TOT	WOR	NOW
Linking text files during print	Y	L	L	Y
Large line lengths for printing up to the length of a page (10 inches or 100 columns)	Y	Y	Y	Y
Superscripts	L	L	N	L
Subscripts	L	L	N	L
Special symbol capability	Y	Y	N	Y
Formatted text preview	N	N	Y	N

Document Text

Feature	HES	TOT	WOR	NOW
Full printer support	N	N	N	N
Proportional character spacing	N	N	N	N
Text for page numbers	N	N	N	N
Full page number formatting (Upper or lower margin. Right, left, or page edge side)	L	N	N	L
Decimal page numbers	N	N	N	N

	HES	TOT	WOR	NOW
Paragraph collection (prevents split paragraph or table at page break)	N	N	L	Y
Support for italics and boldface	L	L	L	L
Table, figure, or photograph insertion	N	N	N	N
Multiple column	N	N	N	N
Typesetter support	N	N	N	N

Form Business Letters

Feature	HES	TOT	WOR	NOW
Support for letter-quality printer	N	N	N	N
Pause for new sheet of paper	N	Y	Y	Y
Multiple copies	N	N	Y	Y
Text insertion from keyboard during printing	N	L	N	L
Prompts for text insertion	N	N	N	N
Vertical tab	N	N	N	N
Margin release	N	N	L	N
Mail list merge	N	Y	Y	Y

Table 2. User-Friendly Features

Word Processor	Min. Memory Expansion	Max. Text Memory	Screen Expan. ?	Word Wrap ?	Hot Line ?	Exam. Doc. File?
HESWriter	None	27K	No	Yes	No	No/No
TOTL.Text 2.5	16K	12K	Lim	Yes	Yes	Yes/Yes
Wordcraft 20	None	14K	No	Yes	No	Yes/Yes
Write Now!	None	27K	No	No	Yes	Yes/No

Table 3. Instruction/Index Guides

Word Processor	Manual Pages	Manual Index	Tutorial	Command Summary	Keyboard Overlay
HESWriter	16	No	No	Yes	No
TOTL. Text 2.5	29	No	Lim	Yes	No
Wordcraft 20	31	No	Lim	Yes	No
Write Now!	112	Yes	Lim	No	Yes

Table 4. Storage Features

Word Processor	Sequential File	Tape & Disk	Disk Commands	Disk Directory
HESWriter	Yes	Yes	No	No
TOTL.Text 2.5	Yes	Yes	No	No
Wordcraft 20	Yes	Yes	Yes	Yes
Write Now!	No	Yes	Lim	Yes

Table 5. Editing Features

Word Processor	True Preview	Search ?	Pointing Device	Delete/ Paste Buffer	Move/ Copy	Control Format
HESWriter	No	No	No	No	No	Line
TOTL.Text 2.5	No	No	No	No	No	Menu/Key
Wordcraft 20	Yes	Yes	No	No	Yes	Line
Write Now!	No	Yes	Yes	Yes	Yes	Key

resides at blocks 3 and 5 of memory, for you technical folks). Although it should be possible to add another 8K of memory with an expansion board, I could not get the cartridge to operate properly in this configuration. As it comes, *Wordcraft 20* has about 6K of memory for text. Among the four programs, only *Write Now!* does not word wrap the display so that words are not cut off at the edge of the screen. But this feature is really a matter of individual preference, I have found.

The hot line I mention in Table 2 is not a program feature, but is a phone number given in the manual so you can contact the program distributors for technical aid. By the way, Cardco is also supposed to be installing a computer bulletin board system that will answer common questions. I have called both their numbers and have received courteous help and useful information.

Of course, if there isn't a hot line or the phone number is busy, what do you do? Well, if you are like me, you actually open up the manual and read it for once! I think that the manual is just as important as the program. In fact, if the program has enough features to make it worthwhile, it absolutely needs a good manual.

I've tried to give you some idea of the merits of each manual in Table 3. The limited (LIM) tutorials mentioned here are those that only take you through simple use of the program without pointing out the really nifty parts. An audio tape tutorial is included with *Write Now!*, for instance, which is rather limited compared to text, although I must mention that example screen layouts for the tutorial are shown in the manual appendix. And although the *Write Now!* manual does not include a command summary, the keyboard overlay tends to fill the lack. The *Write Now!* manual is also printed in a small bound format, not much bigger than the cartridge. This means that the comprehensive information is printed on over one hundred small pages without enough space for decent page formatting. Although the index is very helpful when you know what command you are after, an expanded table of contents would be a great addition.

Naturally, a word processor would be quite useless without some storage scheme. All of these word processors support tape and disk storage, as shown in Table 4. It is interesting that *Write Now!* does not store text as sequential files, which is nearly standard for word processors. And although it is very desirable to see a disk directory when manipulating several text files, *HESWriter* and *TOTL.Text* lack this feature.

The list of editing features presented in Table 5 is by no means complete. This is probably the area where most word processors tend to load in many different commands, since the casual user/shopper will notice these "gee whiz" features long before realizing that the program doesn't even communicate with the printer (for example). Certainly these four are no different than most. However, there seem to be a number of useful commands that are left out in the shuffle, as you can see in the table. Only *Wordcraft 20* can really format a document to the screen. *TOTL.Text,* which is otherwise loaded with commands, cannot find anything in the text for you. Only *Write Now!* can use any pointing device (a joystick), which is odd since these things are in vogue so much now. A delete/paste buffer that can easily cut out and move pieces of text is a very natural editing feature, but only *Write Now!* has it. Both *HESWriter* and *TOTL.Text* lack any facilities for moving or copying text, which can be a real inconvenience. Both *HESWriter* and *Wordcraft 20* editing commands are spelled out on the screen, while *Write Now!* uses special control keys. *TOTL.Text* implements some editing from menus, besides using control keys.

All these tables are enough to make a person's head spin, so if you don't mind a little opinion, I am going to tell what I think of each of these programs as text editors. Keep in mind that a short demonstration of the program may give you, personally, a different impression of the program. I urge you to try them out if you have a local dealer or know someone who owns the program.

HESWriter is a very simple word processor with a simple command set. Although it comes on cartridge, it is actually completely written in native BASIC and is one of the most inefficient programs I have ever seen. I typed a very short text file into each of the four word processors reviewed. It took *HESWriter* one minute and six seconds to print out this 180-word file on a Gemini 10 printer driven through a Cardprint A adapter. At this rate, it takes about half an hour to print a ten page document! Although the screen editor is primitive, it would be possible to get used to it except for one thing. Since the program is written in BASIC and uses an eighteen-character limit on the storage array, it must stop frequently to perform what is called garbage collection. The bottom line to garbage collection hits home when you look up from the document you have been typing to discover that the last two pages you typed in were lost while your computer was taking out the garbage instead of paying attention to the keyboard.

TOTL.Text 2.5 is one of the oddballs of this group. It is really difficult for me to form an opinion, mainly because of the program's features as seen in Table 1. A lot of work went into the manual to describe the many features of the program and how to tap into the command structure if you don't mind programming. All of this is covered well, without filling up a lot of paper. The text editor is passable, although it would not meet my own minimum standards. A lot is made of a machine language subroutine for this program, called Chickspeed, but the addition of machine language really does not speed up the text printout. Rather, it is used to load and save text files faster. With *TOTL.Text,* the printer test file took 41 seconds to print out, almost three-fourths as slow as the agonizing *HESWriter.* But without at least 24K memory expansion in *TOTL.Text,* you cannot deal with more than 4K of text anyway. Also, the altered text storage scheme can eliminate compatibility with other word processors. This is not a word processor for everyone.

I had great hopes for *Wordcraft 20,* since the larger versions in the *Wordcraft* family have an excellent reputation. It appears that the program really needs a major overhaul, though. The line command for the editor is archaic and the default screen colors are hideous. The program does go out of its way to make strange noises while you are entering or editing text, executing a command. My wife thought I was playing arcade games when I was evaluating the program! Although full-screen format works well on full screens, it simply does not translate to the VIC 20's 22-column screen, even though *Wordcraft 20* resets the screen width to 24 columns. That new screen width is another complaint, too. A significant portion of the screen may be cut off on an ordinary television. As for the printing test file, it took 29 seconds to print out. To the program's credit, there is very good support for serial and parallel (non-Commodore) printers built into the program. If you are handy at wiring up cables, it is not necessary to purchase a printer adapter for this word processor.

Write Now! has to get fairly high grades, no matter how it is examined. While the use of a joystick is a bit oddball (why remove your hands from the keyboard?), the cursor keys are still active. It can tackle a lot of jobs, as covered before. *Write Now!* also executed the printing test in 28 seconds, which is quite remarkable. If a good scrolling format preview, letter-quality printer support, and form fill-in features could be added, this would be one heckuva program, even at twice the price. **C**

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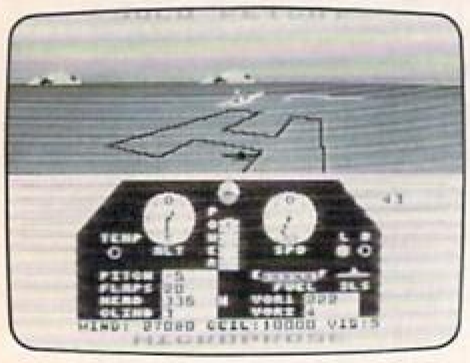


Solo Flight

Reviewed by Michael Burns

Computer: Commodore 64
Publisher: MicroProse Software
10616 Beaver Dam Road
Hunt Valley, MD 21030
Medium: Disk/Tape

Crash! This is what you will do *many* times while learning to play *Solo Flight.* It's not that *Solo Flight* is too hard to play. Rather, it's very difficult to learn to fly a plane as anyone who has played this flight simulator will attest. *Solo Flight* contains not only an excellent flight simulator but a great game.

In *Solo Flight* you choose to fly in one of three different areas: Kansas, Washington-Oregon or Colorado. Each area has seven airports. Kansas has long runways and flat terrain while both Washington-Oregon and Colorado have progressively shorter runways and higher mountains which increase the difficulty.

After choosing the area in which you wish to fly, you then must choose between clear, landing practice, windy or IFR (Instrument Flight Rules) flying options. In the landing practice option, you begin flying on a short final leg to an airport placed directly ahead of you. The IFR option forces you to use the flight instruments in order to navigate in the accompanying low cloud cover. While you are learning to fly, you make your own choice as to which airport you wish to land.

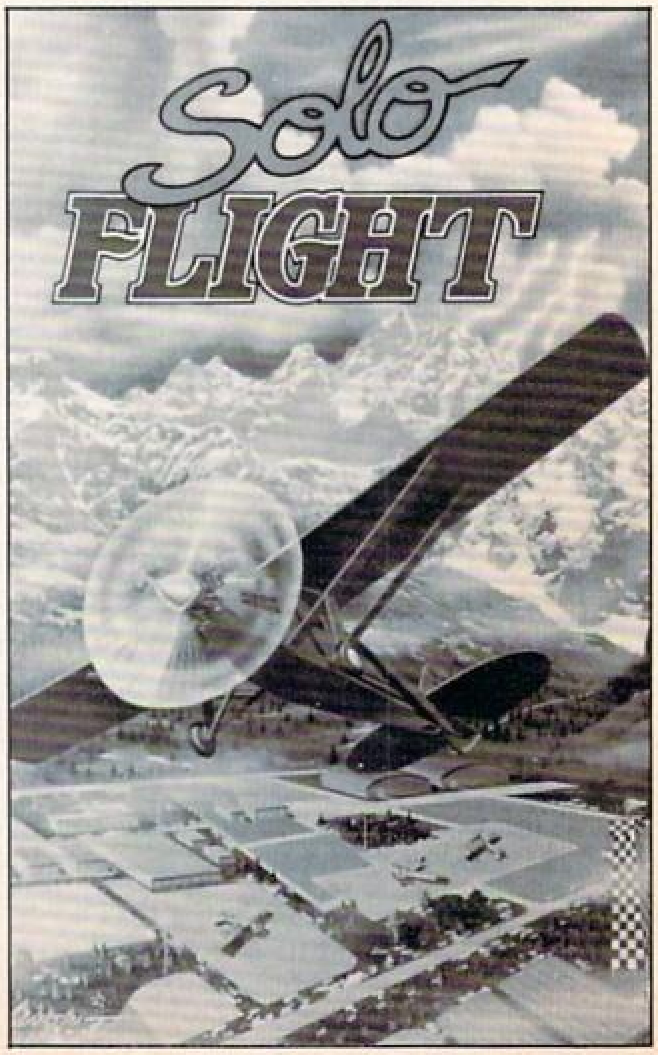
In the game mode of *Solo Flight,* you must deliver five bags of mail to various airports in the state that you have preselected. Instead of selecting flying conditions, you must choose one of four difficulty levels. The four difficulty levels are Student, Private, Senior and Command Pilots. On the Student level, the weather will remain clear and mechanical failures will not occur. On the other difficulty levels, the weather will worsen and your monoplane will be more prone to mechanical failures.

At the start of each game, you are shown a map of the area in which you will be flying (disk version only). Next you must load mail and fuel your plane by pressing the appropriate function keys. The more mail and fuel that is loaded into your plane, the heavier it becomes which causes difficulties in flying.

Upon landing and stopping the plane, you will be shown the map again with the course of your plane plotted. You will also be awarded Landing and Delivery points. Landing points are based on the plane's speed and descent rate at the final moment of impact with the landing strip. The slower the speed and the lower the descent rate, the more points you will earn. Delivery points are determined by the time elapsed between deliveries, difficulty level and state you are flying in. If you fail to land at the designated airport, you will be awarded only Landing points. You continue to deliver mail until all five bags are delivered or until you crash.

Now that you know how *Solo Flight* is played, it's time to learn how to control your plane. The joystick controls ascension, descension and banking of the plane. The joystick button will allow the plane to slip into the wind, causing the plane to lose altitude without a reduction in air speed.

All of the other controls are on the keyboard. The numbers from zero through nine correspond to the amount of throttle. The "F" key will increase the degree of flaps which increases the plane's ascent rate. The "L" and "B" keys are used to raise and lower the landing gear and to apply and release the brakes. The cursor



control keys allow you to see side and rear views from your plane. The last two control keys, "P" and "E", have special uses. The "P" allows you to pause the game while my favorite key, the "E", will create an emergency instrumentation or equipment failure. The effects of these controls are constantly reflected by changes on the instrument panel.

Your view of the screen is from the cockpit, but you can also see your plane from behind. To heighten the view from the cockpit, you are equipped with a realistic instrument panel. The instrument panel itself contains an altimeter, speedometer, artificial horizon, Instrument Landing System (ILS), power meter, fuel gauge and readings for two VOR stations, pitch, climb, flaps and your present heading. Also included are indicator lights for the landing gear, brakes and engine temperature. Included elsewhere on the lower half of the screen are readings for time elapsed, wind velocity and direction, maximum ceiling and visibility.

The instruction booklet includes complete descriptions and indepth usage for all the controls and instruments and how they relate to each other. Also included are VOR bearings for all airports to help you pinpoint their exact location. Maps which show all cities, mountains, airports and VOR stations visible from the air, are included for each state. The instruction booklet also contains an extensive section on landing approaches and instrument approach patterns. Fortunately, you do not really have to know a thing about this section in order to play *Solo Flight*.

After reading the instructions, you may get the impression that landing the plane is nearly impossible unless you are accurately lined up with the runway. This is not true. After playing *Solo Flight* for a while, you will learn that it is possible to make many last second adjustments to your flight path in an attempt to land your plane safely. Becoming proficient at last second adjustments will reduce your need to make missed approach landings, thereby increasing your time bonus. Another way to increase the amount of time that your plane is in the air is to take off from a runway without taxiing to the end. To determine if it is safe to take off, you should look at the last white spot on the runway. If you have about half of the length of the runway remaining, you can take off safely. This should, of course, only be attempted on a long runway.

Overall, *Solo Flight* is a great game. I like it because of its many game options and other added features. My favorite features are the plotting of your flight path, the ability to make instant emergencies and variances in the sound of the engine due to changes in the amount of throttle. Other nice features are the pause button, side and rear views and the inclusion of a demonstration game. These features did not have to be included and are not necessary to play the game, but without them I would not have given *Solo Flight* a high rating. The main imperfection in the game was that occasionally part of the boundary of an airstrip would disappear.

Solo Flight would most likely be enjoyed by anyone who ever wanted to fly a plane and who does not require frantic arcade action. The detailed landing approach section in the instruction booklet is a prime example that this game even has something to offer airplane enthusiasts. **C**

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User Group Log

By Wayne Hunnicutt,
President, Tampa Commodore User Group

With this issue, we introduce a regular column by Wayne Hunnicutt designed to help you make your Commodore user group an ongoing success. We think you'll find it both informative and entertaining.

You have started a user group and now the hard part begins. You have managed to accumulate 15 members, all who say this was a much needed service. Your living room walls are bulging and there are coffee stains on the carpet from holding the first few meetings there. The election of the officers has been held already and they seem to love their positions, but just can't find the time to get anything accomplished! The dues in the treasury are so low that the new treasurer couldn't stop laughing when you told him you needed a roll of stamps and the bank tellers giggle when you walk in! The club librarian tells you if he doesn't get some disks soon, he will start typing out the programs on paper and stick them in a folder. People are starting to call for help at all hours of the night and day: "How do you save something to a disk?" and "How do I get something out to my printer?" But many of these folks never seem to show up at your living room meetings. Is this starting to sound vaguely familiar?

Starting the group was easy, it's the organizing, planning activities and acquiring new members that will make you want to pull your hair out. The unusual items that crop up are loads of fun too. I had one fellow tell me that his wife walked in, took off her wedding band, put it on his keyboard and told him, "You are married more to that computer than you are to me, so it might as well wear the ring, too!".

When I first started my group, I distributed flyers at some of the local computer stores and was expecting to hear that my postman was in the hospital with the hernia he got from delivering all the responses to me. Was I surprised to see him day after day handing me the same old batch of bills. And now, instead of the new members beating a path to my door, I found my living room meetings dwindling down to eight or nine people.

Before I started the group, I had a lot of positive reaction to the mere suggestion of having a Commodore user group. This was all I needed to plunge headfirst into the starting phases of establishing what I thought would be the greatest communications and knowledge exchange for Commodore users that had ever hit this city. And it would be so easy, just look at all the people telling me what a great idea this was. Easy? HA! This has to be one of the biggest misconceptions since Custer said, "Come on, we can beat those Indians".

That is all behind me now. Through trial and error, poor judgment and good judgment and a whole lot of patience, the club is successful and fulfilling its intended purpose.

I have found, through tons of effort, the keys to making a user group grow and prosper. I intend to pass along this knowledge to you in the upcoming columns. Some of the items I will cover are:

- Setting up the club's library. How to categorize, organize, maintain and fill it with public domain software.
- How to publish and distribute a newsletter. What to include in it, how to lay it out and what sections to make.
- How to set up and manage the club's funds, taxes and other legal obligations of a non-profit organization.
- How to acquire new members and hold their interest.
- How to set up committees and delegate responsibilities.
- How to acquire funds for your club treasury by means other than dues.
- How to plan activities and which ones to have.
- How to set up discounts for members at local computer stores.
- How to plan and set up a bulletin board system and where to get one.
- What classes to set up within the group and how to set them up.
- How to use your meeting time wisely and what to cover at the meetings.
- What affiliation with a national user group can do for your local club and why you should seriously consider it!

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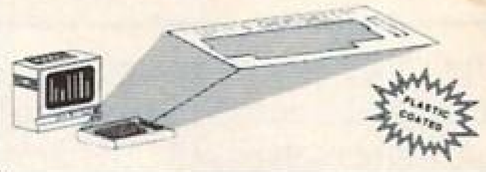

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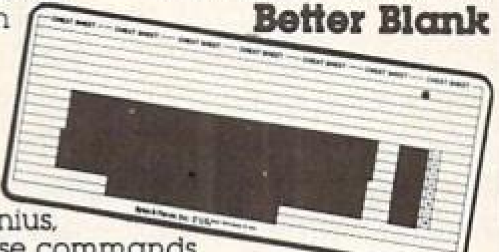

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Did I list a few items you didn't think of? Don't feel too bad, I didn't think of most of them either when I first started out. These and other aspects are very important to the future of any user group.

First, let's put this all in perspective! You don't have to do *all* of that at one time! Make a list of your group's priorities and then just try to accomplish the first thing first, and not worry about anything else until the things which are more important on the list are done. You can waste more time and effort by trying to do too much too fast, so make a plan and stick to it! It might read something like this:

1. A Place to Meet!
2. Naming the Group
3. Planning the meeting
4. By Laws and other legalities
5. Program/File library
6. Newsletter
7. Holding classes
8. Guest speakers
9. Bulletin Board Service

You will need a place to meet and by now, I'm sure you are tired of shampooing the living room rug! To attract new members and give yourself a little peace of mind, you will need to find a regular and more appropriate meeting place. There are quite a few alternatives, and all the ones that I will cover are free. One of the most excruciating times I had when I first started was where to meet. I searched all over and came up with several locations. The one I settled on was a local Community Center sponsored by the city recreational department. They furnish us with the room, tables, chairs, electricity and even advertise us in the local newspaper. They were thrilled to have us, because up to now all they had were dance classes, bingo games, etc. They even have a snack bar. I suggest that you start looking at the local community or civic centers first. One of the other locations I came up with was the public library. Unfortunately they closed at 9:00 and didn't allow any type of drinks, also it was limited to electrical outlets and the privacy for our group was severely restricted. Several other locations had the same problems but were willing to let us meet were a bank, a couple of different churches, a local mall and an American legion post although they wanted to charge us. If you have a Community College or State University nearby, many times there might also be facilities there for a meeting place! So, you see, you have quite a few choices besides the living room. Just get on the phone and make a few calls. I think you will be surprised at how many places are available to a users group.

Now that you have a place to meet, start publicizing it! Put a notice at every store that sells Commodore hardware/software! Remember these are the same stores that get tired of answering users questions and will refer these people to you anyway! A user group should also qualify for Public Service messages on TV or Radio, and usually your local newspaper has some sort of club arrangements as a regular feature. After all, *you* are not selling anything to the people, your user group is providing a great service—that of information and help to people with similar interests, as well as just plain friendship!

Organizing your time and following the procedures I will set forth in coming columns will make your users group grow in a manageable way to meet the needs of new users, experienced people, exchange knowledge and most of all have fun.

Determine your objectives, set up your priorities and make that plan! If you are involved in a user group, let me hear from you! If you'd like to start one, then get going! We can all share our experiences and ideas here together. The real network of Commodore users will be the contact that each individual person has with the local user group. Let me hear your ideas! You can contact me at:

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glitch fix

June/July 1984

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Spring 1984

More-for-22 Subroutine

The satellite subroutine in lines 32 through 52, it seems, will delete the minus sign when displaying negative numbers. To solve the problem, author Kenneth Parr suggests adding the following lines:

```
54 IF N<0 THEN N$=N$+"−"
56 RETURN
```

Also change line 50 to:

```
50 IF LEN(N$)>9 THEN 54
```

August/September 1984

The Commodore Computer Club—A National Organization at Last!

Two glitches here. First, the club is not producing a quarterly catalogue, as the article says, but is rather announcing new products in its monthly newsletter. Second, the scholarship opportunities mentioned are still under consideration and have not been officially sanctioned as yet.

(Continued On Page 128)

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user groups

Because our user group listing has become excessively long, we are now publishing only a partial list in each issue. This time we've included all our user groups in states beginning with letters N through W and all foreign groups. Next issue we'll publish all the groups in states beginning with letters A through M. Then the following issue, it's back to N through W, and so on, until we get so many that we have to publish it in three—or four—or more—parts.

NEBRASKA

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Users Group
2932 Leawood Dr.
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Bob Quisenberry

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Marilyn Sallee

Platte Valley Commodore User
Group (PVCUG)
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Gering, NE 69341
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Jim Parks

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Cindy Springfield

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Franklin Miller

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Commodore Group
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Joseph Windolph

NEW JERSEY

Commodore Friendly
User Group
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Wayne, NJ 07470
(201) 696-8043
Rich Pinto/Colin Campbell

Somerset Users Club
49 Marcy Street
Somerset, NJ 08873
Contact: Robert Holzer

Educators Advisory
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John Handfield

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Thomas R. Molnar

VIC 20 User Group
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(201) 284-2281
G. M. Amin

VIC Software
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Sewell, NJ 08080
H. P. Rosenberg

ACGNJ PET/VIC/CBM
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Belle Mead, NJ 08502
(201) 359-3862
J. M. Pylka

South Jersey Commodore
Users Club
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Mark Orthner

Parsippany Computer Group
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Morris Plains, NJ 07950
(201) 267-5231
Bob Searing

Information 64
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Ridgewood, NJ 07450
(201) 447-4422
Dave Garaffa

Jersey Shore Commodore
Users Group
Wall Township First Aid Bldg.
1905 Monmouth Blvd
Wall Township, NJ
(201) 542-2113
Bob McKinley
3rd Thurs. 7:30 p.m.

Monmouth Commodore/PET
Users Club
25 Fox Wood Run
Middleton, NJ 07748
(201) 671-4059
Stan Gawel

Morris Area Commodore
Users Group (MACUG)
61 Early St.
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Tom Limoncelli

Rancocas Valley Commodore
Users Group
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Mt. Laurel, NJ 08054
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Mario Eisenbacher

The Bell Communication
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Dave Garaffa

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John C. Jones
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Lincoln, NJ 08221
398-4044
B.J. Chadwick

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PET User Club
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Pelham, NY 10552
Joe Brown

SPUG
4782 Boston Post Rd.
Pelham, NY 10803
Paul Skipski

VIC 20 User Club
151-28 22nd Ave.
Whitestone, NY 11357
Jean F. Coppola

VIC 20 User Club
339 Park Ave.
Babylon, NY 11702
(516) 669-9126
Gary Overman

VIC User Group
1250 Ocean Ave.
Brooklyn, NY 11230
(212) 859-3030
Dr. Levitt

L&M Computer Club
VIC 20 & 64
4 Clinton St.
Tully, NY 13159
(315) 696-8904
Dick Mickelson

VIC 20/Commodore 64
Users Group
31 Maple Dr.
Lindenhurst, NY 11757
(516) 957-1512
Pete Lobol

VIC Information Exchange
Club
336 W. 23 St.
Deer Park, NY 11729
Tom Schlegel
SASE & phone please

New York Commodore
Users Group
380 Riverside Dr., 7Q
New York, NY 10025
(212) 566-6250
Ben Tunkelang

LIVICS (Long Island
VIC Society)
20 Spyglass Lane
East Setauket, NY 11733
(516) 751-7844
Lawrence Stefani

VIC Users Group
c/o Stoney Brook
Learning Center
1424 Stoney Brook Rd.
Stoney Brook, NY 11790
(516) 751-1719
Robert Wurtzel

Poughkeepsie VIC User Group
2 Brooklands Farm Rd.
Poughkeepsie, NY 12601
(914) 462-4518
Joe Steinman

VIC 20 User Group
Paper Service Division
Kodak Park
Rochester, NY 14617
David Upham, Sr.

Manhattan 64
c/o Steve Lazarowitz
1440 Freeport Loop
Brooklyn, NY 11239
(212) 647-4266
Larry Thompson

Adirondack Commodore 64
Users Group
205 Woodlawn Ave.
Saratoga Springs, NY
(518) 584-8960
Paul Klompas

Rockland County Commodore
Users Group
P.O. Box 573
Nanuet, NY 10965
Ross Garber

New York 64 Users Group
222 Thompson St.
New York, NY 10012
(212) 673-7241
Bruce Cohen

Finger Lakes Commodore
Users Group
c/o Rose City Computer
Associates
229 West Union St.
Newark, NY 14513
(315) 331-1185

The Commodore Users Group
Rochester
78 Hardison Rd.
Rochester, NY 14617
(716) 544-5251
Tom Werenski
Phone Evenings between 7-10

Commodore Computer Club
Publications Dept.,
Grumman Aerospace
1111 Stewart Ave.
Bethpage, NY 11714
(516) 575-9558
Neil Threulsen

Hello, Central!
76-12 35th Ave.
Jackson Heights, NY 11372
Jared Sherman

VIC 20/64 Users Group
NYU Waverly Place
New York, NY 10003
(212) 358-5155
Lawrence Schulman

SCUG (Schenectady
Commodore Users Group)
c/o the Video Connection
Canal Square
Schenectady, NY 12305
Timothy Davis
1st Mon. of Month

Commodore 64 Users Group
S.U.N.Y. at Oswego
Dept. of Industrial Arts
Oswego, NY 13126
John R. Botonkay

Bayside VIC Users
23-20 Bell Blvd.
Bayside, NY 11360
Marc Gerstein

Naples Commodore Users
Group
P.O. Box 11, U.S.N.S.A.
FPO, New York, NY 09521
Donald Schmidt

Commodore Sig Computer
Club of Rockland
P.O. Box 233
Tallman, NY 10982
(914) 357-8941
Peter Bellin

Mohawk Valley Commodore
Users Group
P.O. Box 343
Tribes Hill, NY 12177
(518) 829-7576
William Nowak
2nd Tues. of month 7 p.m.

The New York City VIC/64
Users Group—NYCUG
436 East 69th St.
New York, NY 10021

(212) 787-2854
Joycelyn Woods

505-84-6667 E-3S
5th Gen. Hosp.
APO New York, NY 09154
Gary Lee Crowell

Hudson Valley Commodore Club
P.O. Box 2190
Kingston, NY 12401
1st Wed. of month

Norny Chug
P.O. Box 226
Norwood, NY 13668
353-4591
Andrew VanDuyne
2nd Wed. of month 7 p.m.

The Upstate Commodore Users Group
P.O. Box 5242
Arnot Mall
Horseheads, NY 14844
Chris Johnson

Utica Commodore Users Group
1801 Storrs Ave.
Utica, NY 13501
(315) 733-2244
Phil Rothstein

Queens N.Y. Users Group
67-42 Harrow St.
Forest Hills, NY
Sam Soltan, Bruce Behrend

Commodore 64 Users Group
67-42 Harrow St.
Forest Hills, NY
Sam Soltan

NORTH CAROLINA

Amateur Radio PET Users Group
P.O. Box 30694
Raleigh, NC 27622
Contact: Hank Roth

VIC Users Club
c/o David C. Fonenberry
Route 3, Box 351
Lincolnton, NC 28092

Microcomputer Users Club
Box 17142 Bethabara Sta.
Winston-Salem, NC 27116
Joel D. Brown

VIC Users Club
Rt. 11, Box 686
Hickory, NC 28601
Tim Gromlovits

Raleigh VIC 20/64 Users Group
410-D Delta Court
Cary, NC 27511
(919) 469-3862
Larry Diener

Down East Commodores
302 Belltown Rd.
Havelock, NC 28532
(919) 447-4536
Bruce Thedin

Tryon Commodore 64 Club
P.O. Box 1016
Tryon, NC 28782
(704) 859-6340
Robin Michael
1st Mon. of month at 7 p.m.

Down East Commodore Users Groups
302 Belltown Rd.
Havelock, NC 28532
(919) 447-4536
Bruce Theden

Cleveland County Computer Club
P.O. Box 489
Grover, NC 28073
(704) 937-9124
Todd Patterson

NORTH DAKOTA

CCCC (Capitol City Computer Club)
c/o Veterans Memorial Public Library
520 Avenue A East
Bismarck, ND 58501
Rolf Arnold

The Computer Club
Lock Drawer 1497
North Dakota State Penitentiary
Bismarck, ND 58502
Ed Reitan

OHIO

Dayton Area PET User Group
679 Murray Hill Drive
Xenia, OH 45385
(513) 372-4077
Charles Tobin

Central Ohio PET Users Group
107 S. Westmoor Avenue
Columbus, OH 43204
(614) 274-0304
Contact: Philip H. Lynch

Commodore Computer Club of Toledo
734 Donna Drive
Temperance, MI 48182
Gerald Carter

Chillicothe Commodore Users Group
P.O. Box 211
Chillicothe, OH 45601
William A. Chaney

Licking County 64 Users Group
323 Schuler St.
Newark, OH 43055
(614) 345-1327

11433 Pearl Rd.
Strongsville, OH 44136
Paul M. Warner

C.P.U. Connection
P.O. Box 42032
Brook Park, OH 44142
Danni Hudak

SE Cleveland Commodore Crazies
18813 Harlan Dr.
Maple Heights, OH 44137
(216) 581-3099
Carl Skala

Commodore Users of Blue Chip (Cincinnati)
816 Beecher St.
Cincinnati, OH 45206
(513) 961-6582
Ted Stalets

Southwestern Ohio Commodore Users Group
P.O. Box 399117
Cincinnati, OH 45239
2nd Wed. of month at 7 p.m.

S.W.O.C.U.G. (SW. Ohio Commodore Users Gp.)
8401 Wicklow Ave.
Cincinnati, OH 45236
Joe Beresford

Marion Ohio Commodore Users Group (MOCUG)
775 Wolfinger Rd.
Marion, OH 43302
(614) 726-2630
Van Munro

Commodore Local Users Exchange (C.L.U.E.)
3040 Highcliff Ct.
Columbus, OH 43229
Pat Murphy
2nd Mon. of month 6:30 p.m.

Medina Commodore Users Group
P.O. Box 182
Medina, OH 44258
(216) 722-2611
Jill Carpenter
2nd Wed. 7 p.m.

Akron Area C-64 Users Group
2453 Second St.
Cuyahoga Falls, OH 44221
(216) 923-4396
Paul Hardy
4th Sat. of month 1-4 p.m.

OKLAHOMA

Southwest Oklahoma Computer Club
c/o Commodore Chapter
P.O. Box 6646
Lawton, OK 73504
1:30 at Lawton City Library

Commodore Hobby Users Group
P.O. Box 15238
Tulsa, OK 74158
(918) 834-5658
Annette Hinshaw

Greater Oklahoma Commodore Club
1401 N. Rockwell
Oklahoma City, OK 73127
(405) 789-3229
Randy Hill

Commodore Oklahoma Users Club
4000 NW 14th St.
Oklahoma City, OK 73107
(405) 943-1370
Stanley B. Dow

Commodore Users
Box 268
Oklahoma City, OK 73101
Monte Maker, President

Commodore Users of Norman
209 Brookwood
Noble, OK 73068
Matt Hager

Commodore Users Group
Muskogee Computer Society
202 S. 12th St.
Muskogee, OK 74401
Steve Ford

OREGON

NW PET Users Group
John F. Jones
2134 N.E. 45th Avenue
Portland, OR 97213

U.S. Commodore Users Group
P.O. Box 2310
Roseburg, OR 97470
(503) 672-7591
Richard Tsukiji

Southern Oregon VIC/64 Users Group
3600 Madrona Lane
Medford, OR 97501
(503) 779-7631
James Powell

Jefferson State Computer Users Group-JUG
2355 Camp Baker Rd.
Medford, OR 97501
John Newman

PENNSYLVANIA

PET User Group
Gene Beals
P.O. Box 371
Montgomeryville, PA 18936

Penn Conference Computer Club
c/o Penn Conference of SDA
720 Museum Road
Reading, PA 19611
Contact: Dan R. Knepp

PACS Commodore Users Group
LaSalle College
20th & Olney Ave.
Philadelphia, PA 19141
(215) 951-1258
Stephen Longo

Glen Schwartz
807 Avon
Philadelphia, PA 19116

Gene Planchak
4820 Anne Lane
Sharpsville, PA 15150
(412) 962-9682

PPG (Pittsburgh PET Group)
c/o Joel A. Casar, DMD
2015 Garrick Drive
Pittsburgh, PA 15235
(412) 371-2882

Westmoreland Commodore Users Club
c/o DJ & Son Electronics
Colonial Plaza
Latrobe, PA 15650
Jim Mathers

Commodore Users Club
3021 Ben Venue Dr.
Greensburg, PA 15601
(412) 836-2224
Jim Mathers

VIC 20 Programmers, Inc.
c/o Watson Woods
115 Old Spring Rd.
Coatesville, PA 19320
Robert Gougher

G.R.C. User Club
300 Whitten Hollow Rd.
New Kensington, PA 15068
Bill Bolt

NADC Commodore Users Club
248 Oakdale Ave.
Horsham, PA 19044
Norman McCrary

CACC (Capitol Area Commodore Club)
P.O. Box 333
Lemoyne, PA 17043
(717) 732-5255
Geoffrey Hebert

G/C Computer Owners Group
c/o Gilbert Associates, Inc.
P.O. Box 1498
Reading, PA 19607
Extension 6472
Jo Lambert (215) 775-2600

Boeing Employees Personal Computer Club
The Boeing Vertol Co.
P.O. Box 16858
Philadelphia, PA 19142
(215) 522-2257
Jim McLaughlin

Main Line Commodore Users Group (MLCUG)
1046 General Allen Lane
West Chester, PA 19380
(215) 388-1581
Emil Volcheck

Commodore Users Group
781 Dick Ave.
Warminster, PA 18974
Matt Matulaitis

The Commodore Users Club of S.E. Pittsburgh
c/o Groves Appliance & TV
2407 Pennsylvania Ave.
West Mifflin, PA 15122
Charles Groves

Compstars
130 Blue Teal Circle
Audubon, PA 19403
Mike Norm
Meet at Audio Video Junct.

Scranton Commodore Users Group
P.O. Box 211
Clarks Summit, PA 18411

Clifton Heights Users Group
P.O. Box 235
Clifton Heights, PA 19018

Oxford Circle 64 Users Group
Trinity Church
6900 Rising Sun Ave.
Philadelphia, PA 19111
(215) 743-8999
Roger Nazeley (215) 535-9021
3rd Mon. 7:30-9:30 p.m.

VIC Software Development Club
440 W. Sedgwick
Apt. A-1
Philadelphia, PA 19119
(215) 844-4328
Tracy Lee Thomas

Bits & Bytes
1015 Dale Rd.
Secane, PA 19018
(215) 544-5875
Dave Boodey

CACCC-Centre Area Commodore Computer Club
214 Computer Building
University Park, PA 16802
(814) 237-5912
Bill Hillner

Bellwood-Altoona Users Group
1433-13th Ave.
Altoona, PA 16603
(814) 942-9565
D. N. Dantof

Eight Squared
P.O. Box 76
Mount Holly Springs, PA 17065
(717) 486-3274 or
(717) 766-5185
Mindy Skelton

A-K 64 Users Group
1762 Fairmont St.
New Kensington, PA 15068
(412) 335-9070
Alton E. Glubish
2nd & 4th Tues. of month

Lincoln Technical Inst.
5151 Tilghman
Allentown, PA
(215) 770-1032
Alan Karpe
2nd and 4th Thurs. 7:30 p.m.

Worldwide Commodore Users Group
P.O. Box 337
Blue Bell, PA 19422
David Walter

Upper Buxmont C-64 Users
655 Bergey Rd.
Telford, PA 18969
(215) 723-7039
Don Roques

PUERTO RICO

CUG of Puerto Rico
RFD #1, Box 13
San Juan, PR 00914
Ken Burch

VIC 20 User Group
655 Hernandez St.
Miramar, PR 00907
Robert Morales, Jr.

RHODE ISLAND

Irving B. Silverman, CPA
160 Taunton Ave.
E. Providence, RI 02914
Contact: Michelle Chavanne

Newport VIC/64 Users
10 Maitland Ct.
Newport, RI 02840
(401) 849-2684
Dr. Matt McConeghy

The VIC 20 Users Club
Warwick, RI 02886
Tom Davey

Commodore Users Group
c/o Data-Co.
978 Tiogue Ave.
Coventry, RI 02816
(401) 828-7385
Victor Moffett

SOUTH CAROLINA

Beaufort Technical College
100 S. Ribaut Rd.
Beaufort, SC 29902
Dean of Instruction

Computer Users Society of Greenville (CUS)
Horizon Records-Home Computers
347 S. Pleasantburg Dr.
Greenville, SC 29607
(803) 235-7922
Bo Jeanes

Commodore Computer Club of Columbia
P.O. Box 2775
Cayce
West Columbia, SC 29171

Spartanburg Commodore Users Group
803 Lucerne Dr.

Spartanburg, SC 29302
(803) 582-5897
James Pasley

The Charleston Computer
Society
P.O. Box 5264
N. Charleston, SC 29406
(803) 747-0310
Jack Furr
3rd Tues. of month at 7 p.m.

The Executive Touch C-64
& VIC 20 Users
208 Hwy 15
Myrtle Beach, SC 29577
448-8428
Patricia Watkins

SOUTH DAKOTA

PET User Group
515 South Duff
Mitchell, SD 57301
(605) 996-8277
Contact: Jim Dallas

VIC/64 Users Club
608 West 5th
Pierre, SD 57501
(605) 224-4863
Larry Lundeen

TENNESSEE

River City Computer
Hobbyists
Memphis, TN
1st Mon. at Main Library

Nashville Commodore
Users Group
P.O. Box 121282
Nashville, TN 37212
(615) 331-5408
Dave Rushing
3rd Thurs. at Cumberland Mus

Commodore User Club
Metro Computer Center
1800 Dayton Blvd.
Chattanooga, TN 37405
Mondays 7:30 pm

Metro-Knoxville Commodore
Users Club
7405 Oxmoor Rd., Rt. #20
Knoxville, TN 37921
(615) 938-3773
Ed Pritchard

Memphis Commodore
Users Group
2476 Redvers Ave.
Memphis, TN 38127
(901) 358-5823
Harry Ewart

ET 64 Users Group
P.O. Box 495
Knoxville, TN 37901
(615) 966-8478
Walt Turner

Jackson Commodore
Users Group
31 Carriage House Dr.
Jackson, TN 38305
(901) 668-8958
Rick Crone

TEXAS

PET Users
2001 Bryan Tower
Suite 3800
Dallas, TX 75201

Larry Williams
P.O. Box 652
San Antonio, TX 78293

PET User Group
John Bowen
Texas A & M
Microcomputer Club
Texas A & M, TX

CHUG (Commodore Houston
Users Group)
8738 Wildforest
Houston, TX 77088
(713) 999-3650
Contact: John Walker

Commodore Users Group
P.O. Box 49138
Austin, TX 78765
Dr. Jerry D. Frazee

VIC Users Group
3817 64th Dr.
Lubbock, TX 79413

64 Users Group
2421 Midnight Circle
Plano, TX 75075
S.G. Grodin

Savid Computer Club
312 West Alabama
Suite 2
Houston, TX 77006
Davi Jordan, Chairman

Gulf Coast Commodore
Users Group
P.O. Box 128
Corpus Christi, TX 78403
(512) 887-4577
Lawrence Hernandez

Mid-Cities Commodore Club
413 Chisolm Trail
Hurst, TX 76053
Bruce Nelson

Interface Computer Club
814 North Sabinas
San Antonio, TX 78207
M. E. Garza, President

Gulf Coast Commodore
Users Group
P.O. Box 128
Corpus Christi, TX 78403
(512) 887-4577
Lawrence Hernandez

ICUG (Irving Commodore
Users Group)
3237 Northgate #1289
Irving, TX 75062
(214) 252-7017
Robert Hayes

Commodore Computer
Club (C3)
c/o Lamar Full Gospel
Assembly
1200 S. Sumner
Pampa, TX 79065
(806) 665-3444
Randy Mills
Every other Thurs. 7 p.m.

1110 Texas Ave.
Mart, TX 76664
(817) 876-2710
James Meeker

The Great Northwest CBM 64
Users Group
6302 War Hawk Dr.
San Antonio, TX 78238
647-3881
Randy

Commodore Users Group
624 Bellview St.
Sulphur Springs, TX 75482
Danny Miller

Corpus Christi Commodores
P.O. Box 6541
Corpus Christi, TX 78411
(512) 852-7665
Bob McKelvy

The Woodlands Commodore
Users Group
3 Splitrock Rd.
The Woodlands, TX 77380
(713) 292-8987
Andrew Gardner

VIC 20 Users Group
6416 Brookhaven Trail
Ft. Worth, TX 76133
(817) 346-1407
Jeff Southerland

SCOPE
P.O. Box 3095
Richardson, TX 75083
2nd Sat. of month 1:30 p.m.

UTAH

Utah PUG
Jack Fleck
2236 Washington Blvd.
Ogden, UT 84401

The Commodore Users Club
742 Taylor Avenue
Ogden, UT 84404
Contact: Todd Woods Kap,
President

David J. Shreeve,
Vice President

The VIClic
799 Ponderosa Drive
Sandy, UT 84070
Contact: Steve Graham

VIC 20 Users
324 N. 300 W.
Smithfield, UT 84335
Dave DeCorso

Northern Utah VIC & 64
Users Group
P.O. Box 533
Garland, UT 84312
David Sanders

The Commodore Users Group
652 West 700 North
Clearfield, UT 84015
(801) 776-3950
Rodney Keller,
Richard Brenchly

Mountain Computer Society
P.O. Box 1154
Sandy, UT 84091
Dave Tigner

VERMONT

Burlington Area Commodore
Users Group
6 Mayfair
South Burlington, VT 05402
658-4160
Steve Lippert

VIRGINIA

Northern VA PET Users
Bob Karpen
2045 Eakins Court
Reston, VA 22091
(803) 860-9116

VIC Users Group
Rt. 2, Box 180
Lynchburg, VA 24501
Contact: Dick Rossignol

VIC Users Group
c/o Donnie L. Thompson
1502 Harvard Rd.
Richmond, VA 23226

Dale City Commodore
User Group
P.O. Box 2004
Dale City, VA 22193

Tidewater Commodore
Users Group
4917 Westgrove Rd.
Virginia Beach, VA 23455
Fred Monson

Fredericksburg Area
Computer Enthusiasts
P.O. Box 324
Locust Grove, VA 22508
(703) 972-7195
Michael Parker

VIC 20 Victims
4301 Columbia Pike #410
Arlington, VA 22204
(703) 920-0513
Mike Spengel

Peninsula Commodore 64
Users Group
124 Burnham Place
Newport News, VA 23606
(804) 595-7315
Richard G. Wilmoth

Norfolk Users Group
1030 West 43rd St. B-4
Norfolk, VA 23508
489-8292
Larry Pearson

NASA VIC 20 User Group
713 York Warwick Dr.
Yorktown, VA 23692
Harris Hamilton

135 Beverley Rd.
Danville, VA 24541
David Gray

R.A.C.E. Commodore
Users Group
4726 Horseman Dr.
Roanoke, VA 24019
(703) 362-3960
Larry Rackow

Commodore Users of Franklin
1201 N. High St.
Franklin, VA 23851
(804) 562-6823
D. Bruce Powell

Fredericksburg Computer Club
P.O. Box 1011, College Station
Fredericksburg, VA 22402
(703) 371-4184
Steven Northcutt
Shelkee Asso., 7:30 p.m.
2nd Tues.

Washington Area C-64 UG
(McLean)
c/o Kent Gardens School
7426 Eldorado St.
McLean, VA 22012
(703) 523-1995
Martin Smith
3rd Thurs. of month 7 p.m.

Franconia Commodore
Users Group
J. Marshall Library
6209 Rose Hill Dr.
Alexandria, VA 22310
(703) 971-5021
Mark Sowash
3rd Tues. of month

Washington Area C-64 (Burke)
P.O. Box 93
Mt. Vernon, VA 22121
(703) 360-6749
Dick Jackson
Burke Library, 4th Sat.

Arlington VICtims (20/64)
Fairlington Community Center
4501 Arlington Blvd.
Arlington, VA 22204
(703) 524-0236
Clifton M. Gladney
2nd Wed. of month 7 p.m.

Capitol Area Commodore
Enthusiasts
P. Henry Library
2312 Tangle Vale
Vienna, VA 22180
(703) 938-6313
Don Swinney
2nd Sat. of month 1:30 p.m.

PENTAF (Pentagon)
9912 Colony Rd.
Fairfax, VA 22030
(703) 273-1337
Ralph Poole
11:30 a.m., Rm 5B1057

Alexandria Users Group
1206 Westgrove Blvd.
Alexandria, VA 22307
Jeff Hendrickson

WASHINGTON

NW PET Users Group
2565 Dexter N. 3203
Seattle, WA 98109
Contact: Richard Ball

PET Users Group
c/o Kenneth Tong
1800 Taylor Ave. N102
Seattle, WA 98102

Whidbey Island Commodore
Computer Club
947 N. Burroughs Ave.
Oak Harbor, WA 98277
Michael D. Clark

Central Washington
Commodore Users Group
1222 S. 1st St.
Yakima, WA 98902
Tim McElroy

Blue Mountain Commodore
Users Club
15 Stone St.
Walla Walla, WA 99362
(509) 525-5452
Keith Rodue

Spokane Commodore
User Group
c/o N. 310 Raymond #1
Spokane, WA 99206
Stan White

CBM Users Group
803 Euclid Way
Centralia, WA 98531
(206) 736-4085
Rick Beaber

Computer Club
c/o Honeywell, Inc.
5303 Shilshole Ave., NW
Seattle, WA 98107
(206) 789-2000
John Goddard

C-64 Diversity
18204-67th Ave., N.E.
Arlington, WA 98223
(206) 435-4580
Jill Johnston

Central Washington
Commodore Users Group
P.O. Box 10937
Yakima, WA 98909
(509) 248-8193
Sam Cox

Fort Lewis Commodore
Computer Club
Quarters 2821-A
Fort Lewis, WA 98433
(206) 964-1444
Jim Litchfield
1st & 3rd Thurs. 7:30 p.m.

WEST VIRGINIA

Personal Computer Club
P.O. Box 1301
Charleston, WV 25325
Cam Cravens

Commodore User Group
73 Pine Hill Estates
Kenova, WV 25530
(304) 453-2124
Marc Hutton

Logan Computer Club
P.O. Box 480
Logan, WV 25601
C. R. Wilson, Jr.
1st Tues. of month 7 p.m.

Commodore Home Users
Group—C.H.U.G.
81 Lynwood Ave.
Wheeling, WV 26003
(304) 242-8362
Alice Shipley

Commodore Computer Club
203 Lightner Ave.
Lewisburg, WV 24901
(304) 645-1150
Chris Apperson

WISCONSIN

Sewpus
c/o Theodore J. Polozynski
P.O. Box 21851
Milwaukee, WI 53221

Waukesha Area Commodore
User Group (WACUG)
256½ W. Broadway
Waukesha, WI 53186
Contact: Walter Sadler
(414) 547-9391

Commodore 64 Software
Exchange Group
P.O. Box 224
Oregon, WI 53575
E. J. Rosenberg

C.L.U.B. 84
6156 Douglas Ave.
Caledonia, WI 53108
(414) 835-4645 p.m.
Jack White
2nd Sat. every month
10:00 a.m.

VIC-20 & 64 User Group
522 West Bergen Dr.
Milwaukee, WI 53217
(414) 476-8125
Mr. Wachtl

Menomonie Area Commodore
Users Group
510 12th St.
Menomonie, WI 54751
(715) 235-4987
Mike Williams

C.U.S.S.H.
3614 Sovereign Dr.
Racine, WI 53406
(414) 554-0156

Tim Tremmel
3rd Saturday of month

Madison Area Commodore
Users Group
1552 Park St.
Middleton, WI 53562
(608) 831-4852
John Carvin
3rd Thurs. each month

S.W.I.T.C.H.
W156 N8834 Pilgrim Rd.
Menomonee Falls, WI 53051
(414) 255-7044
Len Lutz

Milwaukee Area CBM64
Enthusiasts (M.A.C.E.)
P.O. Box 340
Elm Grove, WI 53122
(414) 259-5991
Kevin Wilde

The Eau Claire CBM64
Users Group
Rt. 5, Box 179A
Eau Claire, WI 54703
(715) 874-5972
John Slavsky, Jr.
2nd Thurs. 7 p.m.

WI Asso. of VIC/64
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Peter Archer

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June/July 1984

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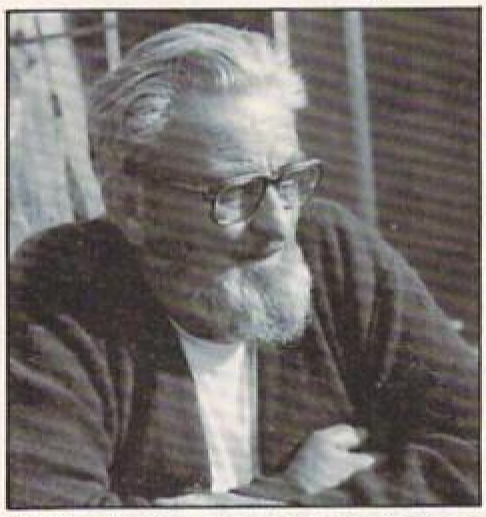
Letters to my Grandchildren



June/July and August/ September 1984

FH Shedd, the real grandfather in the series.

The nice but bland "grandfather" illustration we included with FH Shedd's informative and entertaining series, we discovered, is far from representative of the real grandfather who wrote the articles. We offer our apologies to Mr. Shedd and include, herewith, photos of the real person—and his grandchildren, Lucas and Miriam.

Lucas (l.) and Miriam, recipients of their grandfather's computing tutelage.

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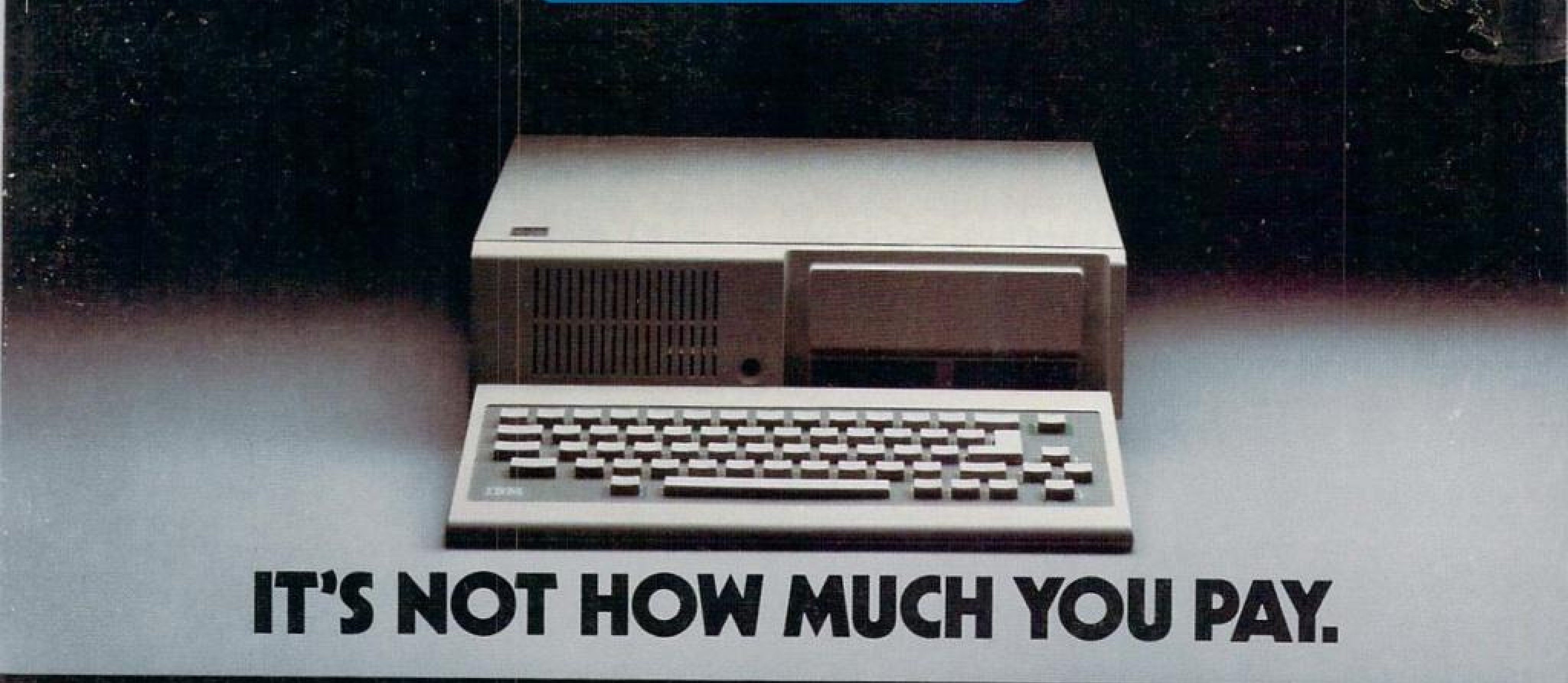
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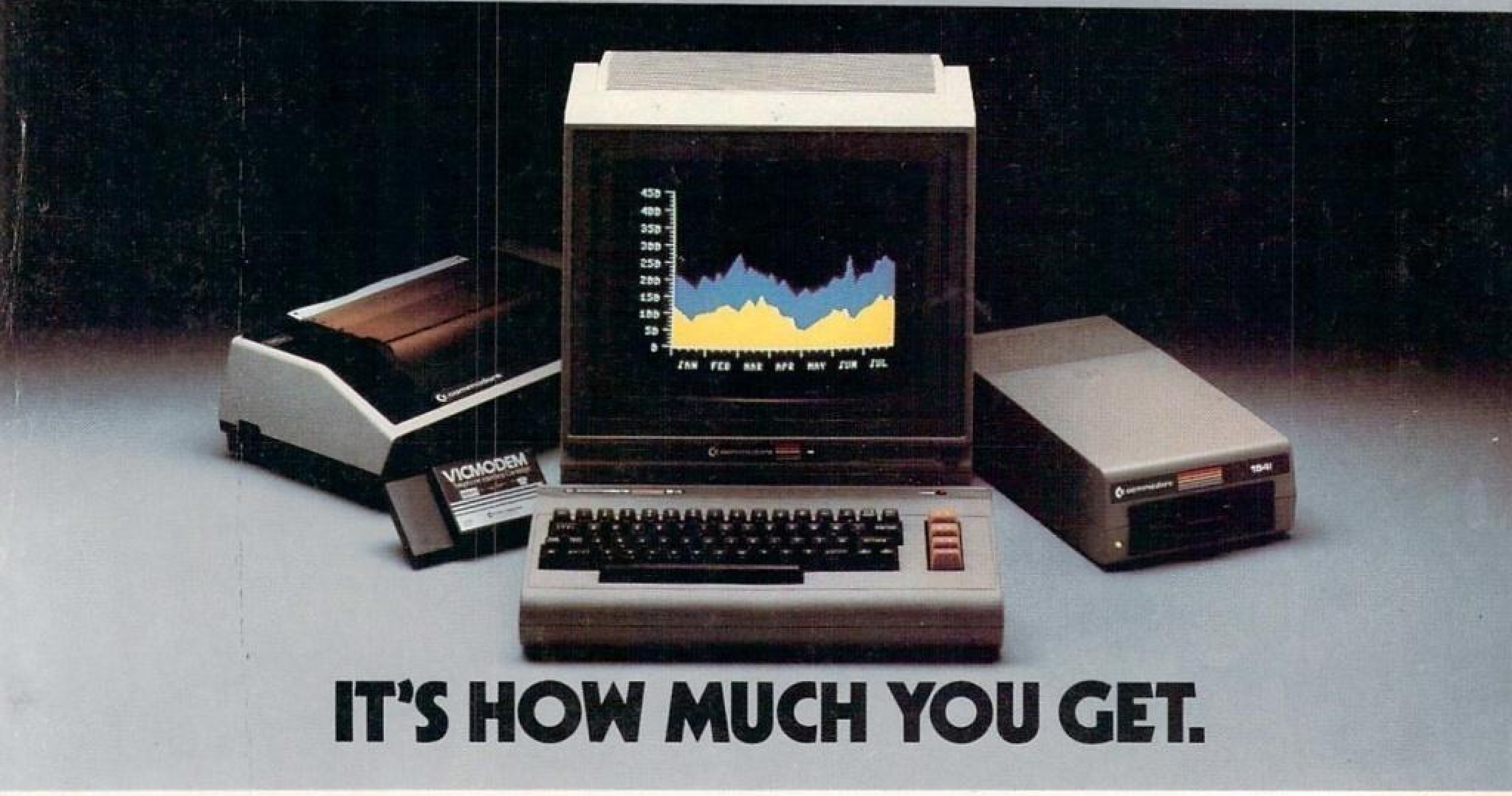
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